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Gains and Losses Caused by Rising Prices

By FABIAN FRANKLIN

Editor, *The Review*

THE enormous advance in prices, which has taken place in the past five years, has caused disturbances, material and psychological, so grave as to be comparable with those directly caused by the waste and destruction of the war itself. The unsettled condition of people's minds in relation to the familiar concerns of daily life, which has attended the disarrangement of price relations, has contributed no inconsiderable share to the social unrest with which the world is beset. While the general level of prices has, let us say, doubled, many large classes of incomes have remained stationary, or nearly so, and others have tripled, and quadrupled, and more. In this situation, owing to the very general tendency of human beings to cry out when they suffer loss or injury and to say little or nothing when they are the recipients of unexpected gain, it was inevitable that the air should be filled with lamentations, while of rejoicing over good fortune little is heard by the public. And, aside altogether from this peculiarity of human nature, it is only too true that such a disturbance of prices as we have been witnessing must be thought of as preponderantly evil. When, through no merit of their own, but through the automatic effect of a change in the monetary situation, one class of persons is enabled to indulge in unaccustomed luxuries, this cannot be regarded as an offset to the hardships of a lowered standard of

living to which, through no fault of their own, that same change subjects another class.

HIGH PRICES DISTINGUISHED FROM HIGH COST OF LIVING

All this should be clearly admitted and understood. But it is nevertheless true that a considerable part of the popular feeling on the subject, a considerable part of the indefinite discontent which the situation arouses, may be ascribed to an unfortunate use of language. It may seem fantastic to assert that if, instead of "high cost of living," we had all habitually spoken of "high prices," a great deal of error, both intellectual and emotional, would have been avoided. But that is the sober truth. "High cost of living" instantly and inevitably suggests hardship; it naturally brings up the thought that everybody has to do more work in order to get the same "living." In point of fact, long before the war, and when the rise of prices, though serious, was trifling in comparison with the present scale, the constant use of the phrase "high cost of living" had engendered a widespread feeling not only that life was becoming more and more difficult for people in general, but also that this phenomenon was an inevitable part of the development of modern civilization. This feeling could not have arisen, or at least could not have attained such prevalence, if people had habitually spoken of "high prices,"

instead of "high cost of living." The community as a whole *may* suffer from a genuine *high cost of living*—a high cost of living brought about by a falling off in productive power; but there is nothing in the mere fact of *high prices* that necessarily suggests such a falling off. As a matter of fact, in the pre-war period the high prices were neither caused, nor supposed to be caused, by any decline of productivity; the *real* cost of living of the community as a whole had not increased; its total income as measured in the volume of commodities and services at its disposal was not lessened; and the only way in which anybody had been affected adversely was through his particular income not having risen by as great a percentage as that by which the general level of prices had been increased. Some incomes had risen by more, and some by less than this latter percentage; if all had risen by the same percentage, nobody would have been either gainer or loser. And, while "the man in the street" might not always have borne this in mind, yet it would never have been far from his thoughts if he had been in the habit of talking and hearing of "high prices;" whereas the phrase "high cost of living," with its strong and instinctive implication of evil, stands in the way of any thinking that he might otherwise do on the subject.

FACTORS IN THE RISE OF PRICES

Actual Scarcity.—During and since the war it has unfortunately been true that the cost of living has risen in the true sense as well as in the sense in which the phrase is popularly used. There has been destruction of capital,

devastation and impairment of natural resources, all on a great scale; and, though these things have not taken place in our country, the vast exports that we have made to supply the deficiencies of Europe have had the same effect on our home supply—for the time being—as diminished productivity would have had. Enormous governmental expenditures—in other words, the diversion of effort and of natural resources from productive to non-productive purposes—have produced an effect of the same nature. Moreover, there is good reason to believe that there has been a slackening of working power caused both by lessened hours of work and by diminished energy in the worker, which has contributed another important item to the lessening of productivity. On the other hand, it ought not to be overlooked that there has been a large accession to the working forces of the country through the addition of hundreds of thousands of women to the ranks of the wage earners and salary earners. On the whole, it seems clear that actual scarcity, the net result of these various causes, has been a considerable factor in the rise of prices. But a moment's reflection must suffice to show that by far the greatest element in the case is the fall in the purchasing power of money caused by the great increase in the volume of the monetary medium; that is, of ordinary currency and of bank credits. For, while this volume has been increased by about 100 per cent, anybody who looks about him and sees what people are eating, and wearing, and enjoying generally, must realize that if the supply of commodities has diminished, it has cer-

tainly diminished by but a small fraction of such a percentage. In the main, then, what is going on around us is the long-familiar phenomenon of rising prices caused by an increase in the volume of the monetary medium; the rise, however, in the present instance being of an extent and rapidity never before witnessed in so vast a field, and presenting also some peculiarities due to the special circumstances of the time.

Decline in Purchasing Power of Money.—When such a rise of prices—such a fall in the purchasing power of money—takes place, most classes of income suffer (or the reverse) only through the irregularity with which the rise is put into effect. But there is one large class that takes a dead loss, with no compensation or readjustment. Incomes derived from fixed money obligations due to their possessors by others continue to yield the number of dollars nominated in the bond and no more, however rapidly the purchasing power of those dollars may decline. Interest on bonds issued by governments or corporations; interest on long-term mortgages; ground rents, either irredeemable, or having a long term of years to run, or redeemable at the pleasure of the lessee at a fixed capitalization, are instances of this kind of income. The loss suffered by the lessened purchasing power of the monetary unit in incomes of this kind continues (supposing that the high prices continue) without any compensatory gain during the entire term for which the obligation runs. And even at the end of that term there is no assurance that any compensating factor will enter into the case. Those

who invest money during a time of steadily rising prices do find some compensation for the loss in the value of their principal in that rise of the rate of interest which both theoretical considerations and practical experience show to be an accompaniment of rising prices. But *high* prices, as distinguished from *rising* prices, have no tendency whatever to cause an increase of the rate of interest. Accordingly, the holder of a bond of which the principal falls due *after* the period of rising prices has ended, but while the high level of prices is still maintained, gets no offset for the fall in the value of his principal through any increase in the rate of interest.

In the case of annuities, of course, the loss is still more evidently without compensation, annual income being the only element in the case. It is one of the remarkable facts in the story of this period of falling value of money that one has heard so little of the sufferings of those whose incomes, being in whole or in part definitely fixed in terms of money, have been so disastrously cut down. In the days of falling prices, in the '80's and '90's of the last century, the heavens were rent with the outcries of the "debtor class." It is a most noteworthy circumstance that nothing of the kind is heard in these times from the creditor class, nor is it without interest to observe that the "debtor class" is as mute over its blessings today as it was vociferous over its injuries thirty years ago.

ADJUSTMENT OF SALARIES AND WAGES TO INCREASED PRICES

Apart from the case of fixed money income, the way in which different

classes are affected by the rise of prices turns on the slowness or the rapidity with which the price commanded by the commodities or services which they supply becomes adjusted to the general rise. It is a familiar fact that salaries are slowest of all to respond. There are many reasons for this. One is that salaried positions are more individual in their character than are wage-workers' jobs. A person holding a salaried position runs a kind of risk in giving it up quite different from that which even a skilled workman, not to speak of an unskilled laborer, encounters. The question of organization has comparatively little to do with the case. No class of workers, perhaps, has had its compensation more strikingly increased than that of domestic servants, who have no organization at all; the great point in their case is that they have no difficulty in finding new jobs when they throw up their old ones. Most classes of salaried workers are very differently placed in this regard. But there is also another factor which exercises a great influence in the matter of salaries. Once raised, it is difficult to lower them, and employers hesitate to make what they feel would be a permanent advance in their expenses when they are not certain of the permanence in the rise of prices. Where very large profits have been made by business concerns, they have, in a great many instances, made handsome additions to salaries in the shape of a bonus at the end of a year; but this has been far from being so general in practice as might be desired. Moreover, a large proportion of all the salaried classes are in the service of governmental and other public insti-

tutions. In the case of government officials, the raising of salaries has been impeded both by mere inertia and by the justified feeling that salaries once raised by law are almost sure to stay at the advanced point, whatever may happen in the way of a fall of prices. Nobody heard of any government salaries being lowered during the period of low prices which covered a large part of the last quarter of the nineteenth century. The proper way to deal with the problem is to make advances in salaries promptly, but in a way that makes their continuance explicitly dependent on the level of general prices. The case of college and university professors—other than those in state and municipal institutions—stands in a different category. The endowed college or university has limits set to its expenditure by the income from its invested property; and the consequence has been a lowering of the professor's ability to meet the requirements of his standard of living which has taken on the dimensions of a great public as well as personal evil. In many cases, relief is now in sight, through the great "drives" which are being made, and through the promised aid of the General Education Board. Finally, it ought to be remarked in regard to the salaried classes in general that if prices should ultimately come down, after salaries have been adjusted to the high level, this class will experience a gain which will be a counterpart to the loss they are now suffering. Salaries will be even slower to come down than they were to go up; and their possessors will find themselves automatically in the receipt of a higher real income through the fall of the

prices of those things which go to make up their "living."

Economists have always justly pointed out that in a period of rising prices, brought about by an increase in the volume of money, the rise in wages lags behind that in commodities. The demand for commodities, as measured in terms of money, rises promptly, being the natural vent for the new money at the command of purchasers. Those who had the goods mark them up as soon as it becomes apparent that the supply will not hold out to meet the demand at the old prices; but the raising of wages is a more serious matter. It hangs back for the same kind of reasons (though in a far less degree) as the raising of salaries. However, the impact of the new volume of money during the period of the great war was of a different character from that which takes place in ordinary instances of increase in the volume of money. What happened was not a gradual infiltration of the new money, but a sudden imperative demand for enormously increased production in certain definite directions. That demand took the shape, so far as money is concerned, of vast issues of bonds and notes in Europe and of a great flow of gold and expansion of credits in this country; and it was directed toward a tremendous stimulation of production of munitions and other supplies incident to the prosecution of the war. Accordingly, over a large part of the labor field there was immediately so intense a demand for labor as to bring about amazing increases in rates of wages in the occupations affected. Millions of working people, therefore, have not suffered from "high cost

of living" at all; on the contrary, they have been able to live better than ever before, because their pay has increased more rapidly than prices have risen. This phenomenon—due to a definite cause other than the mere fall in the value of the monetary unit—so far from discrediting the traditional economic view of the matter, actually gives occasion for a confirmation of it. For, in spite of the natural tendency in a rise of wages in one field to raise wages in all, it seems to be thoroughly established by statistics that the average of all wages has even now, at the end of five years, hardly caught up with the rise in the "cost of living."

RECIPIENTS OF PROFIT CAUSED BY RISING PRICES

The case of the independent producer—whether he be farmer or manufacturer, individual or corporation—and of the "business man"—whether he be merchant, or banker, or middleman—is in strong contrast with that of the salaried man or the wage earner. In a time of rapidly rising prices, the man whose income is derived from the profits of production or trade is constantly the gainer by the change of prices. The costs of his business—fixed charges, rents, wages and salaries—are slower to rise than the prices at which he sells his products or which he is able to charge for his share in the process of sale. Moreover, he buys his raw materials, or the wares in which he deals, at the prices of today, while his sales are made at the advanced prices of, say, six months hence. This state of things has always been recognized as being the explanation of the "business prosperity"

which attends a time of rising prices; a prosperity which consists in the business man making exceptional gains at the cost of the classes which, as we have seen, are suffering from the very cause that makes his situation so fortunate. It is idle to rail at this as "profiteering." You cannot keep prices down while money, or what serves the same purposes as money, keeps getting more and more abundant—unless, indeed, you compelled people to keep their money idle, which none of the profiteer-hunters has ever proposed. Moreover, if prices keep rising, business profits are bound to be swollen during the process. It may be wise to impose a special tax upon these profits; that is a separate question. The profits themselves are an inseparable incident of the process of rising prices. A merchant or manufacturer might, indeed, sell his goods at a lower price than the market afforded; but, unless there was a conspiracy of such self-denial covering the whole range of production and trade, the money thus released to the purchaser by one dealer would remain effective to boost the prices which others, either in his own or in other lines, would obtain. The thing is too fantastic to be considered. To be sure, there has been "profiteering" that is reprehensible; in the confusion and turmoil of a period of rapidly changing prices, advantage has been taken of ignorance, of the difficulty of keeping track of prices, of peculiar exigencies which do not reflect real market conditions; but in the main, the great profits that have fallen into the hands of producers—by no means excepting the "honest farmer"—and business men have been

not the result of any wrong practices on their part but the outcome of economic conditions over which they have no control. The spectacle of so many persons growing rich while so many others are reduced to sore straits to keep up a decent standard of living is undeniably offensive to one's sense of justice; but it is idle to indulge in vaporous denunciation of persons who, favored by fortune, have been guilty of no wrong, or to expend upon worse than futile schemes of punitive repression energy which might be directed toward rational consideration of economic policies.

DEFLATION A WORLD-WIDE PROBLEM

Just what may be done with safety, and with a just regard for the rights and interests of all classes, to bring prices down to a lower level is one of the most difficult of all economic questions. Its consideration, even in a superficial way, is beyond the scope of this article. But it is not out of place, perhaps, to say a few words on the subject. The problem, difficult as it is in our own country, is infinitely less difficult than it is in the European nations, in which the gold standard has been abandoned under the stress of war, and which have to consider not only the method, but also the basis of a return to it. All our dollars are as good as gold; but there is a large margin of choice as to the volume of notes and credit which we may maintain upon the gold standard; and the value—the purchasing power—of the gold dollar itself depends upon that volume. Its expansion tends powerfully to lower the value of the dollar, and its contraction to raise it;

a state of things quite other than that which existed in normal times, when the value of the dollar—that is, the value of the gold that is contained in a dollar—was influenced comparatively little by the monetary or banking policy of any one country, the gold standard being common to almost the whole commercial world. A policy of cautious but consistent “deflation” would bring about a gradual lowering of prices. This would correct some of the injustices of the existing situation, which are certainly serious enough to demand correction, if correction is attainable. The great difficulty that must always be borne in mind in the pursuance of such a policy is that the process of falling prices, while perhaps not more painful, is incomparably more dangerous than that of rising prices. Rising prices hurt people as consumers; falling prices hurt them as producers and business men. And unfortunately anything that hurts producers and business men has disastrous consequences far beyond the mere increase of their “cost of living.” If their business shows a loss, or even

a profit much below normal, the consequence may be bankruptcy and is almost sure to be a curtailment of enterprise; in either case we are confronted not only with a lessening of supply, but also with the spread of unemployment, which in turn further lessens the chances of gainful business. Indeed, it should be noted as one of the compensations which wage workers get in a period of rising prices, that in such a period, owing to the prevalence of business prosperity, employment is abundant and steady; and, by the same token, in a period of falling prices there is danger of a large amount of unemployment. All this, however, merely emphasizes the necessity of great caution and of expert skill in the carrying out of any policy of deflation; it does not mean that such a policy, properly safeguarded, should not be undertaken. On the contrary, it is of the first importance to recognize the necessity of such a policy, and of steady though cautious pursuance of it, as the one great means by which government and the banks can bring about some relief from the evils of the “high cost of living.”

Prospective Changes in the Price Level

By E. M. PATTERSON, PH.D.

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FROM 1850 to 1914 there were three major price movements. During the first period, which extended to 1873, prices rose. This period was followed by a decline in prices from 1873 to 1895. The third period began with an upward trend in 1896 which was still continuing at the outbreak of the European War in 1914. These three movements were not confined to the United States, but were world wide. In every country they started at approximately the same date, progressed at nearly the same rate and came to an end at about the same time. In 1914, the upward movement was still in progress with no indication of a reaction yet visible.

There is no occasion here to discuss the causes of these changes further than to state the somewhat general belief that they were the result of a fluctuating gold production. The discoveries in California, beginning in 1849, gave an annual output that became larger and larger until 1873. Then it declined somewhat for a number of years, only to increase again in the late eighties under the stimulus of new discoveries, and improved methods of extracting the gold from the ore, these changes beginning to have an effect on the price level by 1896.

Another movement began in 1914, and is still continuing at the time this is written. Rapid as was the rise of prices during the eighteen years following 1896, it seems slow when compared

with the changes of the past five or six years. Its causes are amply considered elsewhere in this volume of *The Annals*, and we need only observe that they are a combination of large issues of paper money by banks and governments, an increase of the deposit liabilities of the banks and a considerable scarcity of many kinds of commodities.

CONSEQUENCES OF PRICE CHANGES

These various changes have had serious consequences. During the period from 1873 to 1895 there was great hardship among those groups who had obligated themselves to pay each year fixed sums of money, but whose receipts from products sold were constantly less as prices fell. Imagine a farmer who had assumed a \$10,000 mortgage in 1870, expecting to pay it off at the end of ten years and maintain interest obligations in the interval. In 1873, prices began to fall, and as the years passed the farmer received less per bushel for his products. Larger and larger quantities of grain were needed to meet the interest on his mortgage and to accumulate a sinking fund with which to pay the principal.

In this same period, creditors were constantly better off. Receiving each year fixed sums of money, they could buy more and more commodities as prices fell. As they were not experiencing any hardship they did not complain and even found it hard to

sympathize with the farmer and other debtors. Since the people of the west and the south were predominantly debtors in this period, it is not surprising to discover that they anxiously sought for a remedy. Rightly or wrongly, they thought it would be found in an increased volume of circulating medium and urged that such increases be secured by issues of government paper and by a return to bimetallism.

In the north and east, there were fewer debtors, but more creditors who owned bonds and mortgages on the properties of the south and west. These creditors, whose status was constantly improving through the fall in prices, were quite content with the situation and opposed to the demands of the bimetallists. For about twenty years, the two groups struggled for supremacy, the climax coming in the victory of McKinley over Bryan in the presidential campaign of 1896. After that date conditions were reversed; prices rose and debtors ceased to feel the pressure which was shifted to those classes in the country who were the recipients of relatively fixed incomes—wage earners, the salaried groups and those who were living on the incomes from their investments. The hardships of these groups were serious prior to 1914, but since that time have become even more acute.

Just how great this change has been in the United States is indicated by the index numbers of the United States Bureau of Labor. Accepting the price levels of 1913 as our starting point or 100, the increase of wholesale commodity prices was to 248, and of retail food prices to 201 for January, 1920. Prices of these commodities

are thus from two to two and one-half times as high as in 1913. These increases actually did not begin (in the United States) until September, 1915, when the level was about the same as in January, 1913.

HIGH AND LOW VERSUS RISING AND FALLING PRICES

Before passing to an analysis of the situation now confronting the world, it is important to point out that there is no special reason for concern over either high prices or low prices. High and low in any connection are merely relative terms, and are used here only to compare prices at a given time with those at some other time. If some level—high or low or intermediate as compared with the past—could be accepted and retained our troubles would be lessened. After a time, those prices, wages and salaries which were distinctly out of line would adjust themselves to the adopted level. Neither high prices nor low prices are a cause for concern. Rising prices and falling prices cause the trouble and stabilization is the important thing.

STABILIZATION OF PRICES

There are several alternatives before the world at present. As usual, one possibility is to do nothing, to let matters drift. Of course, by doing nothing one actually decides to face the results of certain very definite tendencies, but the activity of numerous propagandists indicates an unwillingness to take a *laissez-faire* attitude. Let us then suppose that it is actually possible for us to exercise conscious control over price movements. Let us further assume that it is our plan to

accept some price level as suitable, to adjust prices accordingly and then attempt to stabilize prices at this level. What level would we approve and what arguments could be advanced in its favor?

Positive suggestions divide themselves into two groups: one set of arguments being advanced to support the idea that the present price level should be maintained, the other that it should be lowered.

Much may be said in favor of checking any further rise in prices and of maintaining them as near the present level as possible. As has just been pointed out, high prices are not in themselves objectionable. It is changing prices that are troublesome. Why not stabilize at the present level? Or even if one doubts the possibility of stabilization, why not at least avoid any great amount of deflation? Such a policy, if practicable, would save us from the difficulties that there are in falling prices, in the transition from our present level to a lower one. Such a fall would repeat the hardships of the period from 1873 to 1895, and would perhaps be even worse, especially if the new level is to be much lower than the present one and to be attained in a short period of time. Why not endeavor to hold the present level? After a time, those prices and incomes which have lagged behind during the upward trend will catch up and with far less hardship in the community than would accompany falling prices.

This view is supported by our consideration for those who have been forced to borrow at the high price level. If prices now fall, they will suffer precisely as did the farmer who

had mortgaged his farm at the high price level prevailing prior to 1873. In the last few years, both individuals and corporations have borrowed heavily. If the price level declines some of their expenses, as those for wages and raw materials, may go down, but not their obligations to repay fixed sums with interest at a fixed rate until maturity.

But the situation is worse than in 1873. Prices are much higher than at that date and if the return is to a level at all near that of 1914, the hardship will be very great. Moreover, there has entered into the situation a serious complication in the form of a mass of government obligations. The increase in the public debts of the principal belligerents during the war was over \$200,000,000,000 with an addition to their annual debt charges of over \$8,000,000,000. Nor does this include the new debts of any but the central governments. States, municipalities and other political divisions are not included nor are the debts of neutral countries.

What would be the effect on these governments of a lowered price level? Assume that there is a certain manufacturer of cotton cloth in Great Britain whose appropriate share of the annual tax burden is £10,000. Buying his raw materials and paying wages at the present level means a heavy outlay, but selling at present prices he can pay the £10,000 to the government, although he could not pay a higher tax.

Assume that his selling price falls to 50 per cent of the present level. Make also the unreal assumption that all his expenses will fall correspondingly and that his percentage gain will be

as great as at present. Still it will be less in dollars and he will no longer be able to pay £10,000 per annum. But the government's expenditures for debt service will not go down with the general fall in prices. That charge is for a given amount in pounds sterling and failure to pay it means default. A falling price level will add enormously to the fiscal problems of all the leading governments of the world.

There seem to be strong reasons for endeavoring to maintain the present price level, but there are also serious difficulties. Hard as it would be to descend to a lower scale, there are still many prices not up to the high level of some, while most wages and salaries are still lagging far behind. This lag means suffering and discontent and is probably the chief cause of the current industrial unrest.

Another complication is the great danger that the leading banks may at any time find themselves unable to meet the demands made upon them. Note issues and deposit liabilities have expanded greatly. Although gold holdings have in some banking systems been increased, these gains have not been sufficient to maintain the old reserve ratio. The Bank of England, which formerly kept a reserve of about 45 per cent, now has only about one-half that amount. The Bank of France has fallen from between 50 and 60 per cent to between 10 and 20 per cent, while the Bank of Germany has dropped from nearly 60 per cent to less than 3 per cent. Perhaps the former percentages were in a few cases unnecessarily high, but some of the present ones are dangerously small. If the liabilities are not reduced or the

gold base increased, there is danger of a collapse at any time.

Increasing the gold base is by no means easy. The larger part of the gold in private hands was concentrated in the banks during the war and any amounts still out will be very hard to collect. At the same time, the output from the mines has greatly fallen off. The so-called "price" of gold per ounce is necessarily fixed and is, in the United States, \$20.67 per ounce of pure gold. With this selling price fixed and costs of materials and wages rising, the poorer mines are quickly placed at a disadvantage. Many of them have shut down and the annual output of gold has decreased.

This decline in gold output has led to many suggestions for encouraging the industry. It has been suggested, for example, that the mint price of gold be increased to say \$30 per ounce, a plan that would merely mean coining each ounce into fewer dollars and putting into circulation dollars of lighter weight than before. This would, of course, disturb prices further, driving them still higher than at present. If the weight of the dollars was not decreased the difference of \$10 per ounce would have to be met from the general funds of the treasury and would call for heavier taxation. Subsidies are not usually popular and are apt to be less so when governments are so heavily burdened as at present.

Another proposal is to increase the metallic base behind these note issues and deposits by adding silver to the gold,—in other words, by adopting bimetallism. It is curious to notice the respectful attention given to such a plan in some quarters where, thirty years ago, bimetallism was regarded

as the rankest of heresies. Many who fear a collapse of the credit structure of today will listen sympathetically to a discussion which they would not have endured at that time. As yet the proposal has not taken very concrete form, except for the suggestion of an international conference on the subject. If silver should fall from its present price of from \$1.20 to \$1.30 per ounce, the silver interests would probably become more active in their advocacy of the plan. The difficulties of increasing the metallic base behind these obligations, either with silver or with gold, is so great that a reduction in the obligations themselves seems the more probable.

Still another consideration is the strong popular criticism of high prices. Public opinion is strongly in favor of a reduction. A lowered price level has very definite attractions. Having to pay more than formerly for all purchases one is apt to enthuse over the prospect of a lower level. Hence the popularity of deflation. Most of us do not think that our incomes have gone up as much as the prices of the articles we buy, and contend that we are the losers. Similarly we do not always include our own incomes among the items that will fall if the general price level should be lowered. Those of us who are correct in this view may personally gain from deflation, but those whose incomes fall more rapidly than the prices of other things may lose.

On the whole, the forces that will operate to check the upward movement are the more powerful and a reduction seems certain. With it will

come the customary business failures, unemployment and suffering, complicated by increasing difficulties for governments who will find it harder and harder to meet their obligations. The longer the ordeal is postponed, the worse it will be when it comes. The higher we mount the farther we shall fall and the greater the disaster. Stabilization of prices at some level is perhaps the most important problem facing us for solution. Whether it is feasible may be open to argument but in any case, stabilization at the present level is unwise and impossible.

This does not mean a return at once to the pre-war level. Since 1914 numerous changes, many of which are permanent, have occurred. In England the gold coins have been concentrated in the banks, their place in the circulation being taken chiefly by the currency notes. In the United States a similar change has occurred, the gold coins and gold certificates having been collected by the Federal reserve banks. Federal reserve notes and federal reserve bank notes have taken their place. Paper money issued by governments and by banks has displaced the gold and the public seems to be reconciled to the change. The volume of paper money is doubtless too large at present but each dollar of gold in the vaults of the banks will support several times its face value of paper money and deposits. The net result will be a larger volume of circulating medium than before and in the absence of a greatly increased production we may expect a price level higher than that before the war although not so high as at present.

Movement of Wholesale Prices in Various Countries¹ During and Since the War

By LEIFUR MAGNUSSON

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IN the following table the more important index numbers of wholesale prices in the United States and several foreign countries, as compiled by recognized authorities, have been reduced to a common base in order that the trend of prices in the several countries may be directly compared. The results here shown have been obtained by merely shifting the base for each series of index numbers to the year 1913, *i.e.*, by dividing the index for 1913 on the original base into the index for each year or month on that base. These results are therefore to be regarded only as approximations of the correct index numbers in the case of series constructed by averaging the relative prices of individual commodities. This applies to the index numbers of the *Annalist*, the *Economist*, the *Statist* (Sauerbeck), the Department of Labor of Canada, the *Statistique Générale* of France, and, presumably, the *Monthly Statistical Bulletin* of New South Wales, Australia. The index numbers of the U. S. Bureau of Labor Statistics, Bradstreet, Dun, Gibson, and the Bureau of Census and Statistics of Australia are built on aggregates of actual money prices, or relatives made from such aggregates of actual prices, and therefore can be readily shifted to any desired base. In cases where no index numbers for years are shown in the original sources, the figures here presented

¹The original data on which the tables here presented are based, together with the text explanation of the basis on which these percentages are computed, are published in the *Monthly Labor Review* of the United States Bureau of Labor Statistics, March, 1920, pp. 65-67. For a fuller discussion of the basic data underlying these index numbers reference is made to Bulletins Nos. 173 and 181 of the United States Bureau of Labor Statistics. The figures here shown bring the index numbers up to the latest available month. The Italian index of Professor Bacchi has also been added to those shown by the Bureau of Labor Statistics.

have been obtained by averaging the twelve monthly index numbers.

OBSERVATIONS

(1) All the indexes show phenomenal increases in prices between 1914 and 1918, and where the figures are shown there is a further increase in 1919.

(2) Four of the twelve indexes indicate a slight decline in 1914 over 1913, and three show no change, *i.e.*, over half demonstrate no increase in prices in 1914 over 1913.

(3) The increases by quarters and months during 1915 up to the end of 1918 are both significant in amount and steady, generally reaching the maximum in October, 1918.

(4) The winter of 1918-19 shows a rather unsteady movement, but no tendency toward a definite recession of prices.

(5) All the indexes climbed to new high levels during the past winter, the French and Italian indexes leading all others both then and in former years.

(6) Between February and March of this year there have been further increases, changes or decreases. Bradstreet's index alone shows a decrease which may indicate the beginning of a slight though general decrease. It is not unlikely that the peak of prices has been reached and that a recession may be looked for during the forthcoming months.

WHOLESALE PRICES IN THE UNITED STATES AND CERTAIN FOREIGN COUNTRIES

[Index numbers expressed as percentages of the index number for 1913. See text explanation.]

Year and month	United States					United Kingdom		Canada	Australia		France	Italy
	Bureau of Labor Statistics: 328 commodities (variable)	Annalist: 25 commodities	Bradstreet: 96 commodities	Dun: 200 commodities	Gibson: 22 commodities	Economist: 44 commodities	Statist (Sauerbeck): 45 commodities	Department of Labor: 272 commodities (variable)	Commonwealth Bureau of Census and Statistics: 92 commodities	New South Wales Monthly Statistical Bulletin: Number of commodities not shown	Statistique Générale: 45 commodities	Bacchi index number
1890.....	81	78	.....	175	75	83	85	81	97	.....	.....	.....
1895.....	70	68	70	167	72	72	73	71	70	.....	.....	.....
1900.....	80	71	86	77	76	90	88	80	82	.....	.....	.....
1905.....	85	79	88	83	81	84	85	84	84	84	85	.....
1910.....	99	98	98	98	102	93	92	92	92	88	93	.....
1913.....	100	100	100	100	100	100	100	100	100	100	100	100
1914.....	100	104	97	101	105	99	100	100	106	95	102	95
1915.....	101	106	107	105	110	123	127	110	147	114	140	133
1916.....	124	126	128	123	129	160	160	134	138	137	188	200
1917.....	176	187	170	169	191	304	305	174	153	153	262	306
1918.....	196	205	203	190	211	225	226	205	.....	162	339	409
1919.....	212	211	203	190	209	235	242	216	.....	.....	357	.....
1914												
January.....	100	102	97	103	100	97	98	101	1100	98	1100	.....
April.....	98	101	95	99	99	96	96	101	1102	102	1100	.....
July.....	100	104	94	99	101	93	104	99	1109	101	1101	.....
October.....	99	107	100	102	108	101	106	102	1113	95	1107	.....
1915												
January.....	99	108	99	103	111	112	118	103	1127	101	1124	105
April.....	100	109	106	103	117	124	125	108	1153	109	1135	121
July.....	101	105	107	103	111	122	126	111	1167	115	1142	130
October.....	101	101	108	105	103	125	134	112	1142	117	1158	148
1916												
January.....	110	110	119	114	113	143	149	127	1138	123	1179	184
April.....	117	118	128	121	123	156	157	132	1137	137	1190	201
July.....	119	121	125	120	124	156	157	132	1138	134	1186	193
October.....	134	136	131	126	141	171	175	138	1139	140	1198	207
1917												
January.....	151	151	149	140	150	184	187	154	140	150	215	230
February.....	156	159	151	146	156	188	193	160	.....	151	225	.....
March.....	151	170	154	154	166	197	199	163	.....	151	230	.....
April.....	172	188	158	157	188	200	203	169	146	160	248	265
May.....	182	203	164	172	204	200	205	177	.....	153	256	.....
June.....	185	198	168	176	197	210	211	179	.....	152	266	.....
July.....	186	189	175	175	200	208	208	179	158	152	268	304
August.....	185	190	178	181	203	210	207	181	.....	156	270	.....
September.....	183	195	181	178	206	209	207	179	.....	152	280	.....
October.....	181	200	184	182	207	212	212	179	166	147	284	351
November.....	183	199	185	183	206	215	214	183	.....	163	293	.....
December.....	182	200	191	182	209	215	218	187	.....	166	304	.....
1918												
January.....	185	200	195	184	205	215	219	190	173	161	313	363
February.....	186	204	196	185	210	216	220	194	.....	165	315	.....
March.....	187	204	196	189	217	218	222	199	.....	156	329	.....
April.....	190	207	200	191	225	221	223	199	178	135	337	401
May.....	190	207	203	188	216	223	225	204	.....	164	333	.....
June.....	193	201	206	186	211	227	226	207	.....	163	332	.....
July.....	196	203	208	192	212	228	227	210	180	160	333	429
August.....	202	207	208	192	210	233	230	210	.....	170	350	432
September.....	207	210	207	193	212	231	232	211	.....	164	355	433
October.....	204	208	207	193	205	231	233	214	181	160	360	442
November.....	206	205	205	191	204	231	230	215	.....	159	358	438
December.....	206	208	207	191	208	226	231	213	.....	163	353	372
1919												
January.....	203	211	201	190	206	217	224	211	177	160	348	328
February.....	197	201	192	182	201	216	221	206	151	151	340	323
March.....	201	209	187	180	212	212	217	205	153	157	337	326
April.....	203	222	188	182	223	214	217	206	.....	150	332	330
May.....	207	226	187	184	220	222	229	210	156	157	325	337
June.....	207	216	196	189	212	230	235	210	157	168	330	355
July.....	218	219	205	193	220	240	243	217	158	.....	349	359
August.....	226	220	217	200	218	242	250	222	158	.....	347	367
September.....	220	202	211	197	201	245	253	223	158	.....	360	369
October.....	223	200	212	195	191	252	264	221	.....	.....	384	387
November.....	230	201	216	191	197	259	272	227	.....	.....	407	435
December.....	235	205	219	202	206	273	277	239	.....	.....	417	.....
1920												
January.....	248	210	221	204	224	289	288	251	.....	.....	.....	.....
February.....	249	208	227	209	219	303	.....	254	.....	.....	.....	.....
March.....	253	213	226	209	230	.....	.....	.....	.....	.....	.....	.....
April.....	.....	.....	.....	213	.....	.....	.....	.....	.....	.....	.....	.....

¹ Average for January and July.² Quarter beginning in specified month.

The Prices of Today

By J. S. CRUTCHFIELD

President, American Fruit Growers, Pittsburg, Pa.

THE tremendous agitation, excitement and anger with reference to present day prices of labor and food, particularly, does not indicate a high degree of capacity on the part of the government, capital or labor to deal wisely with this problem which must, of necessity, now be most complicated.

The whole price structure on all commodities and labor has been destroyed by the war and we must patiently, by slow and painful process, build a new and better foundation for a price structure which must stand the most violent storms conceivable.

"Necessity is the mother of invention." "What can't be cured must be endured."

The chaotic condition of trade and of all human affairs demands the exhibition of the highest degree of composure, skill, intelligence and resourcefulness of all elements of society, and a recognition of the unity of the human family in all of its inter-relationships.

PRICES IN NORMAL TIMES

Under normal conditions there are periods of years when prices favor the consumer. The producer, in such periods, frequently sells his products at less than cost of production. These conditions prevailed for several years culminating in 1896. At that time, in perishable foods, prices were far below cost of production. No. 1 apples sold in the market for \$1.00 per barrel; potatoes, 25 cents per bushel. This

was the consumers' inning but he did not feel especially favored.

Naturally, the above conditions had a tendency to discourage production in the lines affected and as a natural sequence such periods were followed by seasons of shorter production and higher prices.

The Law of Averages

Those producers who are sensible enough to keep up the same acreage, year after year, in the line of production to which their soil and climate are best adapted begin to profit at the expense of the vacillating type of farmer who fluctuates his acreage, trying to hit the high market.

The natural reaction of increased price is to increase production and decrease or shift the demand, and normally the scales go up and down within the five-year period, or certainly the decade period, turning out a *fair average* profit to the producer and a *fair average cost of living* to the consumer.

While the large mass of producers and consumers find price fluctuations a great hardship, even though the average price over a five-year period may be reasonably fair to each, such price fluctuations seems to be unavoidable. Weather conditions, however, make impossible, especially in the line of fresh fruits and vegetables, the avoidance of quite sudden and sharp fluctuations in supply and demand and, consequently, in price. The extensive use of cold and dry storage, the stand-

ardization of grades and packages, the organization of producers and consumers all tend toward stabilization of prices and benefit both producer and consumer. Certainly, every possible and practicable means should be used to stabilize the market for the protection of both producer and consumer. These fluctuations train the human race to a certain amount of foresightedness and prudence in the conduct of their lives.

PRICES IN ABNORMAL TIMES

All of the above refers to a *normal* fluctuation of prices and profits and consumer costs in *normal* times, whereas what we face today is the most abnormal time in the history of the human race—a time of great scarcity of production and great need of production; a time when the whole economic life of the world has been turned upside down; a time when new standards and new ideas must be adopted to meet such a changed condition. No one knows and no one can know what the right basis of price or wage is, and it will take several years to ascertain this; meanwhile, it is not altogether undesirable that these matters be the subject of the most intense thought, discussion, and dickering, between so-called capital and labor—producer and consumer.

The next decade is bound to be a period of adaptation and adjustment in all of these matters, and it ought to be an opportunity for great beneficial changes. The very thing that we are crying about may prove really a blessing in disguise, and not in very much of a disguise either to persons who will think deeply on the subject and act wisely.

Need for Experiment

The only thing that will cure some of the ills of the human race today, that is, ills of mind especially, is a little experimenting. So far as the *United States* is concerned, it never was in better shape to stand a little experimenting.

We have a safe and sane *majority* that are not going to allow anything *very bad* to prevail *very long*. That portion of the population who insist upon trying some new doctrines might well be given the opportunity now in order to show up the fallacy of the false doctrines and to get back, in a reasonable length of time to—not the old standard—but to a much higher plane of living and of doing business.

A high price and wage level and a more stabilized market is the only possible thing that will stimulate production quickly enough to save the world from actual want or starvation.

Effect of High Prices on Foodstuffs

In the *Journal of Commerce* of March 23, 1920, Italian Premier Nitte is quoted as saying: "More than three hundred million workers have ceased producing the necessities of life throughout the world." The present high range of price is the only thing that will force people, who are now in non-productive enterprises, into actual food production. The only way to help the clerks, as a class, is to thin them out. A lot of able-bodied clerks should be in more productive lines. More city dwellers should be living in the country or suburban districts where they can become producers. Nothing is going to bring about this needed reform in the life of a nation excepting the force and pressure of high priced foodstuffs.

Another very practical thought which should be immediately considered by the real sufferers and complainants: the present high range of prices on many foods is the only thing that will *force* people to study actual food values and to change their diets, utilizing those more plentiful food-stuffs which can be produced and bought more cheaply. At this time the wise provider and the intelligent buyer can actually live for one-fourth to one-half the cost of the improvident and unwise, and live almost as well. A study of the whole subject of food values, and dietetics in general, is greatly needed.

There is no up-to-date farmer today who does not understand how to feed his hogs and stock. In mastering this subject he must not only bear in mind the *cost* of his feed, but also the diet must be properly balanced, and, more than that, it must be appetizing, because even hogs will not eat and thrive on what they don't like. If the American public will get busy they can afford themselves some immediate relief along the line suggested, and if they will think more deeply perhaps certain benefits may be derived to compensate for the hardships of the present price level.

One thing is sure; we are not going to affect the cost of living *very much* by legislation, although it is a subject well

worthy of the intensive study and wise action by our legislators.

Methods for Lowering High Food Prices

In the main, however, there will be found three fundamental remedies: first, elimination of waste; second, increased production; third, more discriminate buying and use of food.

THE CONSUMER THE PRICE FIXER

Who fixes the price? Not the producer; not the wholesale middleman; not the retailer. The consumer has the *power to fix the price*. If he does not exercise it, to a reasonable extent at least, it is his own fault and probably due to a lack of realization that the remedy is largely in his own possession.

The people of this nation are suffering from the chronic habit of eating what they want regardless of adapting themselves daily to what the market affords. Last year, during the months of May and June, old potatoes sold for considerably less than the cost of production; now they are selling at high prices. Everybody seems to want them now. No one seemed to want them then.

Let the American public wake up! The Lord will coöperate with those who will help themselves and living costs will not be so much out of line.

Present Day Prices

By HOWARD E. FIGG

Assistant Attorney-General, United States Department of Justice

OUR greatest post-war problem is undeniably the high cost of living. Its solution presents an even greater problem. Before those of us who would attempt a solution is arrayed a complication of conditions, appalling in their magnitude. It is evident after a careful consideration of all of these conditions that time—in this case as in many others—will be the solvent of our national puzzle. Only through gradual adjustment to the economic standards of former days can equilibrium be attained.

It is a concurrent opinion, however, that a safe and sane adjustment may be directed through a proper realization of the significance of prevalent conditions. Further than this no predictions can be forthcoming. The outcome rests with the people themselves, with their realization of responsibility and their understanding of the influence of individual action upon the general surface of affairs.

Our first duty is to understand thoroughly the facts in the case. The prices of things that enter into our daily lives are nearly twice as much as they were before the war. In England they are three times as much and in Germany and Russia still higher.

This means that, pending adjustment to new conditions, a great hardship falls upon all of us. Those of us who are dependent upon salaries have found, to some extent, a remedy in an increase of pay. This increase, on the other hand, is immediately reflected

in the cost of living. We find ourselves, therefore, getting nowhere by such tactics except to the point where industrial disaster stares us straight in the face. We realize that we cannot indefinitely continue to raise both wages and living cost. The time has arrived when we must stop the operation of such a vicious circle. The plea now is to ask the patriotic people of America to halt in their desires to better their own conditions selfishly and to consider the interests of everyone; to hold the line steady until the economic forces begin to operate, production increases and the normal law of supply and demand becomes operative.

CAUSES FOR THE HIGH COST OF LIVING

Getting at the root of the matter, it is evident that the chief causes for the high cost of living are decreased production incident to the war, inflated currency due to government borrowings, and heavy taxes which are passed on by business men to the ultimate consumer.

SOLUTION OF THE HIGH COST OF LIVING

Increased Production versus Decreased Consumption

Working with these truths as a basis, the solution of the problem then appears to simmer down to a very simple explanation—produce more or consume less. The law of supply and demand is now, and always will

be, the sole cause and regulator of commercial value. If production cannot be increased rapidly enough to overtake the unprecedented demand, then demand must be curtailed until supply has been given a chance. The need for increased production is shown on every hand and in every line of business.

The Department of Justice has advocated from the very start the necessity for stimulation of production. Instead of shirking and slackening our efforts, how vastly better it is for the country, for the world and for our own individual selves to roll up our sleeves and tackle the proposition of restocking the world.

Recognizing this then, our path lies straight before us. Awaiting the realization of our aims, however, the question of control of prices presents itself for consideration and its answer seems a likely alleviation for besetting conditions.

PRICE CONTROL

My own view is, and I believe it can be substantiated from five years of food control all over the world, that until shipping, credits and production become normal there is no effective control of the cost of living that can be set up which is not based on an absolute control of prices and distribution of the great underlying staple commodities.

By this I do not mean price fixing of those commodities, but price stabilization through provision for proper storage of surpluses in the flush season, through control of exports, imports, foreign buying and conditions of credits to foreign nations in such manner as to protect both consumer and farmer.

The control of the middle man and the elimination of speculation in such circumstances is not insuperable, because the margins which should be charged by such trade in the steps of distribution can be determined, and, with a knowledge of the basic price, their conduct can be constantly checked in the public markets by a mere price inquiry and advertisement to the public. This basic system was, of course, destroyed when the government took down the export control and dissolved the Food Administration.

The removal of these safeguards and the vast world speculation in anticipation of the removal of the blockade against central Europe has produced a sickening rise in prices and a lot of profiteering. This is of two sorts. First, vicious speculation for rise in price, and second, the tendency of the whole world to protective buying.

Our weapon against this state of affairs is the enforcement of the Lever Act by the Department of Justice. In the middle of August, the department inaugurated a campaign to discover and prosecute violators of the Food Control Act. Section 6 of the act provided a penalty for hoarding and Section 7 authorized the seizure and sale of hoarded necessities. Eleven hundred and seventy-six prosecutions have been instituted under all sections. In all, sentences have been imposed in 107 cases. The sentences have ranged from five months in jail and \$5,000 fine to small fines.

The educational and constructive organization of the Department of Justice which now operates in the direction of controlling prices, is the High Cost of Living Division. Its

field organization is comprised of state fair price commissioners, who have authority to appoint such committees in cities, towns or counties to determine upon fair prices or fair margins of profit to be allowed on the necessities of life.

The fixing of these prices or margins is not arbitrarily done, but only after full consideration of business interests, and their active coöperation is encouraged by the fair price commissioner at all times. Where possible, the different business and trade interests in a community are represented on those fair price committees.

No one element alone will reduce the present high prices, but by a full coöperation of all elements and by constructive policies being determined upon by the different interests and put into effect by the Department of Justice through its duly organized agents, there is reason to believe that we may anticipate material reductions on certain of the necessities of life in reasonable time.

Our government or any agency of the government cannot singly accomplish the desired results, but by a complete coöperation of the public, labor and business interests, we may anticipate an early reduction in prices. There should be an organization of fair price committees in every city and county backed by the mayors and prosecuting attorneys with the support of the United States attorneys.

ECONOMIC SITUATION IN THE UNITED STATES

Supplementing these definite activities, the department is attempting to bring home to individuals a proper understanding of the economic situa-

tion prevailing in the country. Recognizing the value of concerted action on the part of all, the department is endeavoring to set the situation frankly before the people.

The Price Level

The first thing we believe that people need to do to approach such understanding is to adjust themselves to the price level approximately double the pre-war basis, with no tendency to fall, and considering only our pre-war debt (which would be doubled in commodities and labor if prices fell to pre-war level) the hardship of pre-war creditors must be forgotten.

Under-Paid and Over-Paid Labor

Secondly, people must coöperate in establishing a wage scale commensurate with the cost of decent living conditions. If there is to be contentment in the nation, labor must be neither under-paid nor over-paid. In certain industries now, wages are much higher than the standard necessary to meet fair living expense, and in these industries they will have to come down to a reasonable level. Where labor is much over-paid the commodity which it produces will be priced exorbitantly to the buying public. Where it is under-paid it will be a source of weakness to the nation.

Necessity for Increased Production

Thirdly, people must be educated into the confident knowledge that with a price level insured against falling we may and must increase our rate of production in order to raise our scale of living. For even with the equitable division of the joint products of our labor that will naturally come under a condition of full employment,

we cannot escape the fact that the sum total of our products is all that can be divided. If we produce much we will divide much; if we produce little we will divide little and live poorly.

Stable Average Prices

Lastly, we must consider very carefully and treat more drastically than ever the conspiracies that seek to control the price of any products, or of the labor that enters into its production. The absolute assurance of stable average price which is now set up for years to come makes possible the full employment of all our peoples all the time they wish to work, and an equitable distribution of the fruits of our efforts can only be assured by full and free competition in every department of activity.

The exercise of individual initiative must be encouraged and monopoly in every form must be prohibited. When and wherever an activity is necessarily monopolistic, as in public utilities, they must be publicly owned and operated. Wise statesmanship will take this view and wise citizenship will sustain it. A period of human progress is at hand and the sooner we adjust ourselves to it the better.

Our recognition of the right of labor to live better than it has ever lived before and our determination to continue our economic condition in which the demand for labor will always equal or exceed the supply will emancipate labor the world over, and eliminate the well-meant but ill-advised efforts of organized labor physically to fight or coerce its way to justice.

We should appreciate the efforts of employes as well as employers to organize for the purpose of studying the great questions that concern them, for a lack of knowledge is at the bottom of all our trouble. But we live as a nation; as a nation we will suffer if they are allowed physically to fight or angrily to intrigue for supremacy, or to monopolize their products and profiteer at the expense of the country.

The Great Seal of the United States bears a prophecy that is now to be fulfilled, *Annuat coeptis natus ordo seclorum*—"The things accomplished promise a new order for the ages." A new era is at hand in which intelligent and honest investigation and the application of the Golden Rule to human disputes shall take the place of force and intrigue and to this nation the world is looking for the initiative.

American Control Over War Prices

By PAUL WILLARD GARRETT

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THE task of controlling commodity prices in the United States during the war was a more simple one, though surrounded with difficulties, than was presented abroad, because it began later and after prices had risen relatively higher. Any comparison of government price regulation here with that in Europe, therefore, would seem a less precise measure of how effective our control was than an intensive analysis simply of what we did.¹

THE WAR AND GOVERNMENT PRICE CONTROL

Commodity prices in the United States moved free from government interference during the war, so long as this country was at peace, and by March, 1917, had already risen 56 per cent above their pre-war level. There was no serious thought of price control during April, when the declaration of war sent the weighted "all commodities" index number 14 points higher within the month. The government was not as ready to bring war prices under control as some Allies had been, even during spring as advances continued, in part because there was not here the same dire necessity. The main concern during our first five months of war, and long afterward as

regulation got under way, was to assure adequate production of war commodities and to make government purchases at prices which would encourage production, without allowing excessive profits. The pioneer work of the Council of National Defense during the spring and summer of 1917, therefore, before the Food Administration, Fuel Administration, War Industries Board and War Trade Board had become separate bodies, was directed largely and simply to the surveying of government needs and making purchases. There was little thought then of fixing prices generally to the public.

The entrance of our government into the market for goods, however, at a time when the country was largely under contract to Allied governments, sent prices upward by leaps and bounds, until it became clear that the government must fix prices for its own protection. Our total exports to Europe, measured by values, during the fiscal year 1917 had trebled over pre-war exports. The 1917 frenzied demand here for wheat, intensified by the hunger of the Allies and their inability to make the larger hauls from India, South America and Australia, came when our crop was the smallest in six years. The United Kingdom, which ordinarily imports 70 per cent of her sugar from Germany and Austria, was obliged suddenly to turn here, and our sugar exports to her mounted from 66 million pounds in

¹ The data for this review are taken very largely from *Government Control over Prices* by Paul Willard Garrett, and may be had in fuller form from that volume in a "History of Prices during the War" by Wesley C. Mitchell.

1913 to 1,685 by 1916, an increase of 2453 per cent. Metal prices had a runaway market and were carried by July, 1917, to peaks unknown before. The weighted index number for the whole metals group, taking 1913 as equal to 100, jumped from 247 in March, the month before war, to 333 in July. Individual metal series, of course, made even more serious rises. Basic pig iron, f. o. b. Mahoning or Shenango Valley furnaces, climbed from \$32.25 to \$52.50 in the same months, and steel plates, tank at Pittsburgh, from \$4.33 to \$9.00, nearly 800 per cent above the pre-war quotation. The very important food group index swung upward between March and July from 142 to 167, and the fuels index, in which a variation is of only less general consequence than in the food group, rose from 131 to 168. The final upward swing of various price groups from March, when we were just entering the war, to July, when the necessity for action became unmistakable, is here represented by the Price Section weighted index numbers of 1,366 commodity series.

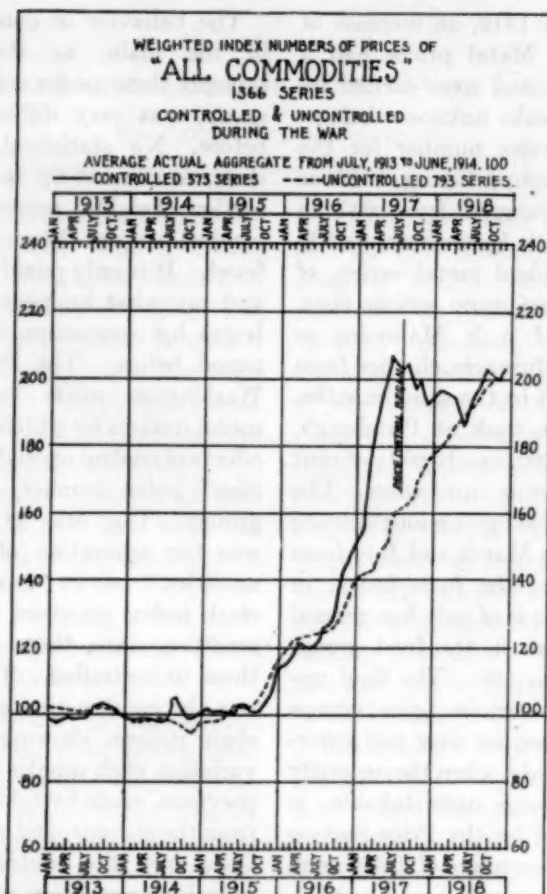
The behavior of commodity prices in the main, as the government brought them under control group by group, was very different from that before. No statistical device, it is clear, can be set up to measure what further heights prices would have reached had not the government interfered. It is only possible to look back and say what happened after control began by comparison with what happened before. The Price Section at Washington made two exceedingly useful devices by which to measure the effects of control upon its "all commodities" index number, and the major groups. The first of these devices was the separation of its "all commodities," seven groups and fifty class index numbers of 1,366 commodities, into those controlled and those uncontrolled. The other device was the construction of corresponding chain indices, showing the percentage variation each month from the month previous, made by taking commodities from the uncontrolled index and putting them into the controlled index each month as regulation was extended.

	All Com- modities	Food	Cloth- ing	Rubber, Paper, Fibres	Metals	Fuels	Bldg. Mat'ls	Chem- icals
1913-14.....	100	100	100	100	100	100	100	100
March, 1917....	156	142	157	143	247	131	132	159
July, 1917.....	189	167	187	144	333	168	153	180

Although the government from the outset was willing that prices advance high enough beyond previous levels to encourage an extraordinary production, these extreme fluctuations forced it formally to interfere late in the summer of 1917.

INDEX NUMBERS OF CONTROLLED AND UNCONTROLLED PRICES

The Price Section index number was, presumably, the best measure of war prices that had been used in this country and had the advantage of a larger number of significant classes.

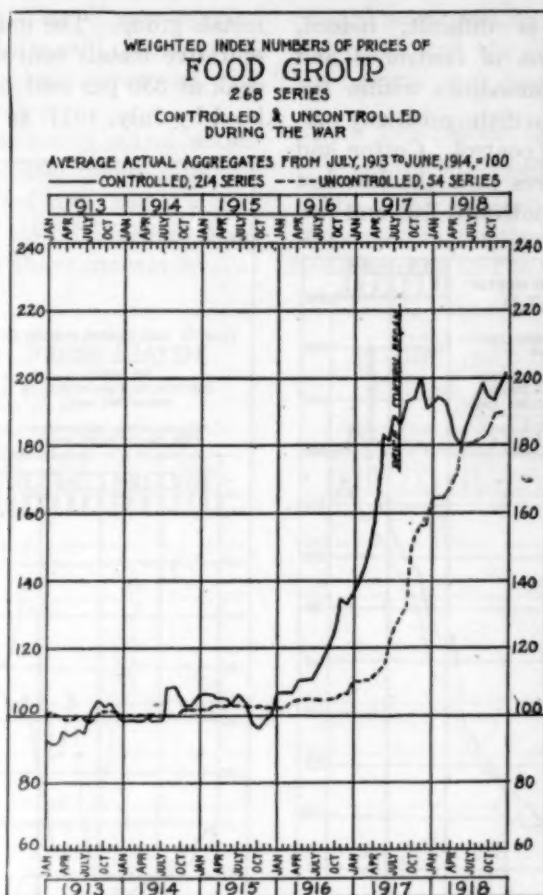


Weighted Index Numbers of Prices.—"All commodities" (1,366 series) controlled and uncontrolled during the war. By months, January, 1913, to December, 1918. (Average actual aggregates, July, 1913, to June, 1914 = 100.) (Controlled, 573 series; uncontrolled, 793 series.)

Its series were, so to speak, laid upon a table and separated into the 573 commodities which sometime came under control during the war and the 793 which did not. It is true that none of the commodities in the so-called controlled list were actually controlled before the summer of 1917, and some not until 1918. One important factor in the comparison, however, is the relative rises above pre-war levels at which each group stood

when control began and afterward—which can only be had by the index number method.

Price Section Index.—The general price level, as represented by the weighted "all commodities" index, stood at 187 in August, 1917, when control began. It is significant, however, that when separated the August index for the 573 commodities which the government then began controlling stood at 204, and that for the remain-



Weighted Index Numbers of Prices.—Food group (268 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914 = 100.) (Controlled, 214 series; uncontrolled, 54 series.)

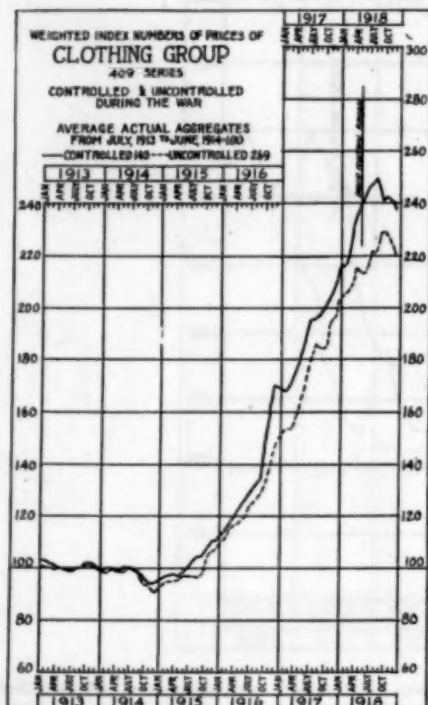
ing 793 at only 162. After control set in, the index of the 793 uncontrolled commodities continued steadily upward, while the index of the 573 controlled commodities fell and never again during the war reached its mid-summer 1917 point.

Food Commodities.—Prices of food commodities generally, with the exception of wheat, were not fixed but regulated by various rules stipulating maximum margins of profit and con-

ditions of sale. The extension of this control, moreover, was a gradual thing, although by the time the armistice was signed virtually all important foods were under some form of license. It is noteworthy that the 214 representative series of controlled foods, beginning in the fall of 1917 after the Food Administration got well organized, fell from 200 to 179 by June, 1918, although larger demands then forced the index up again.

Clothing.—It is difficult, indeed, from a separation of controlled and uncontrolled commodities within the clothing group, to distinguish any perceptible effect of control. Cotton and wool manufactures bear the heaviest weights in the controlled list, and raw

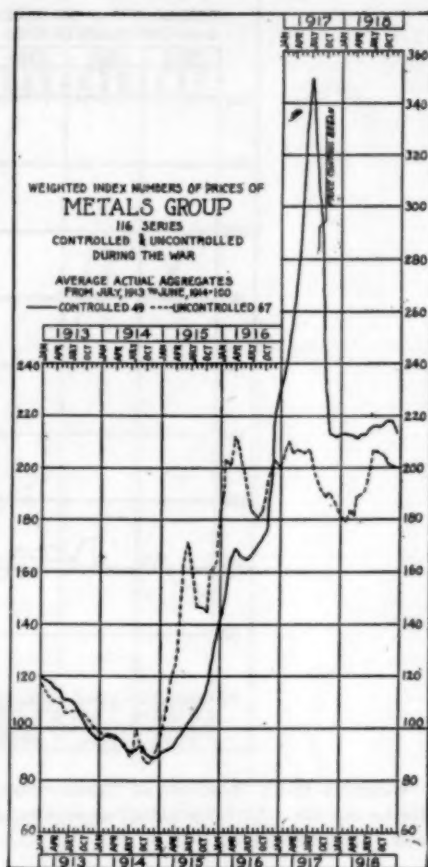
metals group. The index of 49 representative metals controlled reached a peak at 350 per cent of their pre-war level by July, 1917, as compared with



Weighted Index Numbers of Prices.—Clothing group (409 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914=100.) (Controlled, 140 series; uncontrolled, 269 series.)

cotton in the uncontrolled list. There was no government interference, however, until the spring of 1918 and the behavior of the controlled and uncontrolled groups thereafter, as theretofore, was strikingly similar.

Metals.—Scarcely another group shows so clear and immediate an effect of control upon market prices, as the



Weighted Index Numbers of Prices.—Metals group (116 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914=100.) (Controlled, 49 series; uncontrolled, 67 series.)

only 205 for other metals. A decline began shortly before formal interference, in anticipation of control, and the index was brought down to 212 by November. Metal prices, as reflected by the index, were held within a few points of that stable level all during

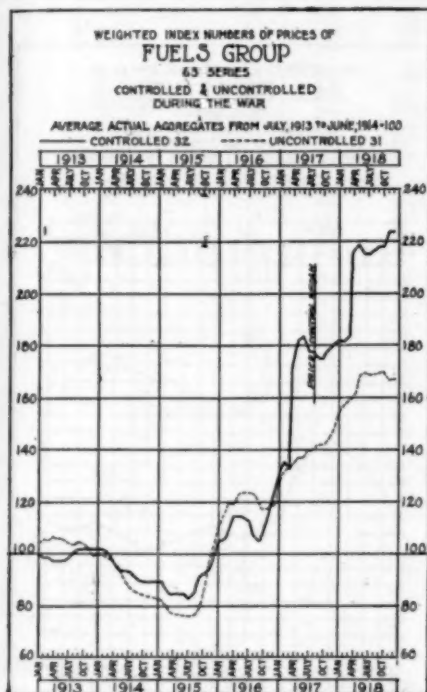
the war. The index of uncontrolled metals, it must be said, shows a remarkably sympathetic movement with the controlled index.

Building Material.—Control within the building material group, although begun in the fall of 1917, and at a time when building material prices stood only 59 per cent above pre-war level as

general movement, however, after control began and the government regulated supply, was downward.

CHAIN INDICES OF CONTROLLED AND UNCONTROLLED PRICES

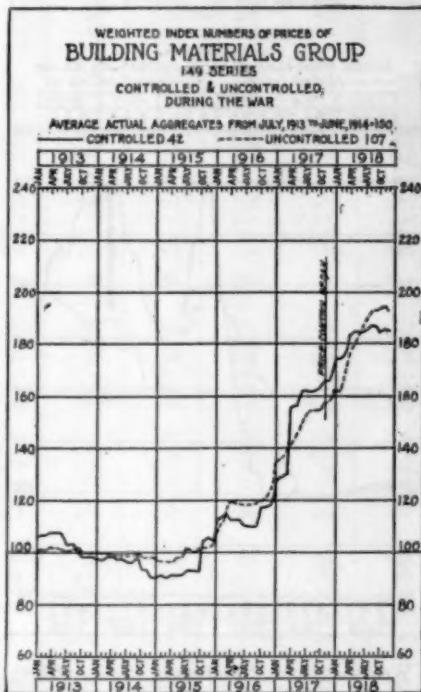
The above separation of the Price Section index number into commodities controlled and those uncontrolled,



Weighted Index Numbers of Prices.—Fuels group (63 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914=100.) (Controlled, 32 series; uncontrolled, 31 series.)

compared with 83 for the general price level, does not appear greatly to have reduced prices.

Chemicals.—Fluctuations within the group of chemicals later controlled were more violent than those of other chemicals all during the war. Their

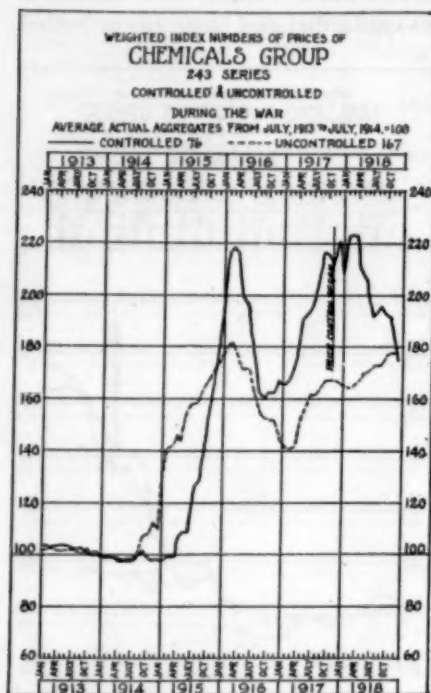


Weighted Index Numbers of Prices.—Building materials group (149 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914=100.) (Controlled, 42 series; uncontrolled, 107 series.)

while exceedingly useful to compare price movements with reference to their respective pre-war bases, falls short in that it represents the 573 commodities as having been controlled from the beginning. The extension of control was, on the other hand, gradual.

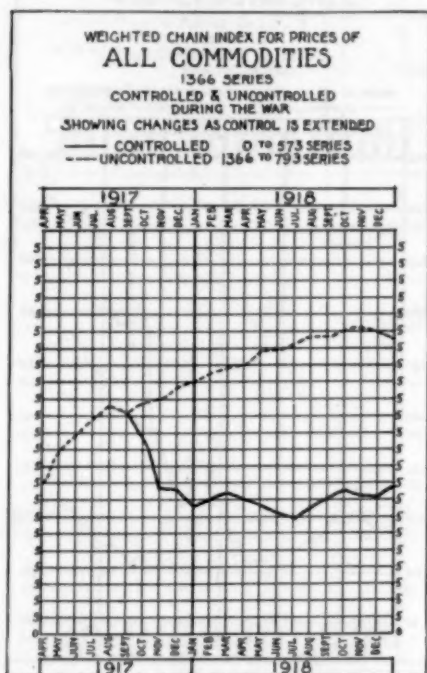
Any precise measure of the effects of regulation, therefore, makes it imperative that no particular series be put into the index until the month when its control began. The second and more accurate measure made by the Price Section, called a weighted chain

creases in exact degree, are thus strictly correct for each month. The "all commodities" chain index in April, 1917, for example, contains 1,366 commodities. In September after regulation began, the commodities were separated into 50 controlled and 1,316 uncontrolled. Each month thereafter, until the cessation of hostilities, the extension of regulations necessitated



Weighted Index Numbers of Prices.—Chemicals group (243 series) controlled and uncontrolled during the war. (Average actual aggregates, July, 1913, to June, 1914 = 100.) (Controlled, 76 series; uncontrolled, 167 series.)

index of the percentage rise or fall each month over the previous month, meets this requirement. The chain index permits, by reason of its changing base, the transfer of commodities from the uncontrolled list freely to the controlled list. The controlled list, which increases from month to month, and the uncontrolled list, which de-



the transfer of certain series from the uncontrolled list to the controlled list. By October, 1918, the original 1,366 uncontrolled commodities had been separated into 573 controlled and 793 uncontrolled. The chain index of controlled commodities, moreover, is a comparison of prices during the month when their regulation began with prices of the identical series in the month before, and the uncontrolled chain

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Base Average Prices July, 1913, to June, 1914 = 100

	All Commodities			Food Group			Clothing Group		
	Controlled	Uncontrolled	All	Controlled	Uncontrolled	All	Controlled	Uncontrolled	All
	(573)	(793)	(1,366)	(214)	(54)	(268)	(140)	(269)	(409)
1913—Months—									
January.....	98	103	103	92	100	98	103	101	102
February.....	97	103	102	91	100	96	103	101	102
March.....	98	103	102	92	100	97	102	100	101
April.....	99	102	101	95	99	97	101	100	100
May.....	98	101	100	94	99	95	100	100	100
June.....	98	101	100	95	100	96	99	100	99
July.....	98	101	100	95	99	96	99	100	99
August.....	102	101	101	100	99	100	100	100	100
September.....	103	102	102	103	101	102	100	100	100
October.....	102	102	102	102	101	102	102	102	103
November.....	102	102	102	103	101	103	102	101	102
December.....	101	100	101	101	101	102	101	100	100
Quarters—									
First.....	97	103	102	92	100	97	102	101	101
Second.....	98	101	100	94	99	96	100	100	100
Third.....	101	101	101	100	100	99	100	100	100
Fourth.....	102	101	102	102	101	103	101	101	101
Year.....	100	102	101	97	100	99	101	100	101
1914—Months—									
January.....	99	99	100	99	100	101	99	99	99
February.....	99	99	100	99	99	101	100	99	99
March.....	99	99	99	99	99	100	100	100	100
April.....	99	99	98	99	100	98	99	99	99
May.....	99	98	97	100	100	98	100	99	99
June.....	98	99	97	99	100	97	100	100	100
July.....	98	98	97	99	100	98	100	100	100
August.....	104	98	101	107	100	105	99	100	99
September.....	105	96	101	108	100	107	98	94	94
October.....	101	95	99	104	101	104	95	93	91
November.....	99	94	98	102	101	103	93	90	88
December.....	99	94	98	102	101	104	94	91	89
Quarters—									
First.....	99	99	100	99	99	101	99	99	99
Second.....	98	99	97	99	100	98	100	100	99
Third.....	102	97	100	105	100	103	99	98	98
Fourth.....	100	94	98	103	101	104	94	91	89
Year.....	100	97	99	101	100	101	98	97	96
1915—Months—									
January.....	101	97	100	105	101	105	95	92	90
February.....	102	97	100	105	101	106	97	94	92
March.....	101	98	100	105	102	105	98	95	92
April.....	101	99	100	104	102	103	97	96	93
May.....	101	101	100	104	102	103	99	97	95
June.....	100	102	100	102	102	100	99	97	95
July.....	103	103	102	105	102	103	101	97	96
August.....	103	102	102	103	102	101	103	97	96
September.....	101	103	102	98	102	99	105	98	98
October.....	101	106	104	97	102	99	108	103	103
November.....	103	109	107	99	102	102	111	106	106
December.....	107	111	111	101	102	103	112	107	107
Quarters—									
First.....	101	97	100	105	101	105	96	94	91
Second.....	101	101	100	103	102	102	98	97	95
Third.....	102	103	102	102	102	101	103	97	97
Fourth.....	104	109	107	99	102	101	111	105	105
Year.....	102	102	102	102	102	102	102	98	97

PRICE SECTION WEIGHTED INDEX NUMBER SEPARATED INTO CONTROLLED AND UNCONTROLLED PRICES, 1916-1918

Base Average Prices July, 1913, to June, 1914=100

	All Commodities			Food Group			Clothing Group		
	Controlled (573)	Uncontrolled (793)	All (1,366)	Controlled (214)	Uncontrolled (54)	All (268)	Controlled (140)	Uncontrolled (269)	All (409)
1916—Months—									
January.....	113	116	115	106	102	105	114	111	110
February.....	115	119	118	106	102	106	117	113	113
March.....	117	121	121	106	103	106	119	116	115
April.....	120	123	123	109	104	109	121	117	116
May.....	121	123	123	110	104	109	124	118	118
June.....	120	124	122	110	104	109	126	120	120
July.....	121	124	123	112	104	111	127	123	122
August.....	125	124	125	116	104	115	131	125	125
September.....	127	125	127	119	104	118	133	128	129
October.....	134	127	132	127	104	125	143	131	135
November.....	143	131	141	133	105	130	159	139	146
December.....	146	135	144	132	105	129	171	145	154
Quarters—									
First.....	115	119	118	106	103	106	117	113	112
Second.....	120	123	123	110	104	109	124	118	118
Third.....	124	124	125	116	104	115	130	125	125
Fourth.....	141	131	139	131	105	128	157	139	145
Year.....	125	124	126	116	104	115	132	124	125
1917—Months—									
January.....	151	140	148	136	110	133	170	151	155
February.....	155	142	151	140	110	136	169	153	156
March.....	164	142	156	150	110	142	173	153	157
April.....	183	146	170	170	111	157	177	158	163
May.....	192	149	178	183	113	166	181	162	167
June.....	201	152	183	182	115	164	189	168	174
July.....	200	160	189	189	123	167	195	181	187
August.....	*204	162	187	*186	127	168	195	186	189
September.....	205	163	186	193	130	173	197	185	189
October.....	198	167	182	194	150	177	201	186	191
November.....	200	172	183	200	156	182	204	195	199
December.....	193	174	182	191	156	178	207	198	202
Quarters—									
First.....	157	141	152	142	110	137	170	152	156
Second.....	194	149	177	179	113	162	182	163	168
Third.....	206	162	187	190	127	169	196	184	188
Fourth.....	196	171	182	193	154	178	204	193	198
Year.....	188	156	175	176	126	162	188	173	177
1918—Months—									
January.....	195	178	185	193	165	182	214	205	209
February.....	198	180	187	196	165	184	216	207	212
March.....	197	182	188	194	166	182	222	210	218
April.....	196	187	191	189	170	180	236	216	228
May.....	192	189	190	182	172	177	*240	214	226
June.....	189	191	189	179	180	175	244	215	228
July.....	195	194	193	186	180	182	247	221	233
August.....	199	195	196	192	180	187	249	221	234
September.....	204	199	201	199	181	194	241	230	237
October.....	201	201	201	194	182	195	242	231	238
November.....	200	200	201	193	188	194	241	227	234
December.....	204	197	203	201	189	202	238	223	230
Quarters—									
First.....	197	180	187	194	165	183	217	207	213
Second.....	192	189	190	183	174	177	240	215	227
Third.....	199	196	197	193	180	188	245	224	235
Fourth.....	201	199	202	196	186	197	240	227	234
Year.....	197	191	194	192	176	186	236	218	227

* Price control began during month.

PRICE SECTION WEIGHTED INDEX NUMBER SEPARATED INTO CONTROLLED AND UNCONTROLLED PRICES, 1913-1915

Base Average Prices, July, 1913, to June, 1914 = 100

	Rubber, Paper, and Fiber Group			Metals Group			Fuels Group		
	Controlled (21)	Uncontrolled (98)	All (119)	Controlled (49)	Uncontrolled (67)	All (116)	Controlled (32)	Uncontrolled (31)	All (63)
1913—Months—									
January.....	144	108	114	120	118	120	100	104	102
February.....	140	108	113	118	113	118	99	106	101
March.....	133	108	112	117	111	116	99	106	101
April.....	125	103	107	115	110	114	98	107	101
May.....	118	103	105	114	109	113	98	106	101
June.....	115	103	105	111	108	111	98	106	101
July.....	109	103	104	111	105	110	99	105	101
August.....	108	103	104	110	105	110	101	103	102
September.....	105	103	103	108	107	108	102	104	102
October.....	97	103	102	105	106	105	102	103	102
November.....	97	103	101	99	103	100	102	102	102
December.....	97	99	99	96	100	96	102	99	101
Quarters—									
First.....	139	108	113	118	114	118	99	105	102
Second.....	119	103	106	113	109	113	98	106	101
Third.....	107	103	103	110	106	109	101	104	101
Fourth.....	97	102	101	100	103	100	102	101	101
Year.....	116	104	106	110	108	110	100	104	101
1914—Months—									
January.....	96	98	98	95	99	96	102	100	101
February.....	98	98	98	98	98	98	102	99	100
March.....	98	97	98	97	96	97	101	99	100
April.....	101	98	99	96	95	96	99	97	98
May.....	100	98	98	94	94	92	94	95	96
June.....	93	97	97	92	92	93	93	93	95
July.....	93	97	96	92	90	91	93	89	94
August.....	110	98	101	93	100	94	93	87	94
September.....	105	98	100	94	92	93	91	85	92
October.....	97	97	98	91	87	91	89	84	91
November.....	99	97	98	89	87	89	89	83	91
December.....	111	97	100	89	90	89	89	83	91
Quarters—									
First.....	98	98	98	97	98	97	102	100	101
Second.....	98	98	98	94	93	94	95	95	96
Third.....	103	97	99	93	94	93	93	87	93
Fourth.....	102	97	99	90	88	89	89	83	91
Year.....	100	97	98	93	93	93	95	91	95
1915—Months—									
January.....	111	97	100	90	95	91	89	82	90
February.....	96	85	90	91	108	93	89	80	89
March.....	98	85	90	92	119	95	86	78	88
April.....	97	85	90	94	124	98	84	77	85
May.....	95	85	90	96	145	101	84	77	85
June.....	98	86	90	99	164	106	84	77	85
July.....	99	86	91	102	172	110	83	76	85
August.....	97	86	90	105	147	110	85	77	86
September.....	95	85	89	110	147	114	91	79	90
October.....	96	86	90	113	145	116	92	87	92
November.....	104	86	92	119	139	124	93	95	95
December.....	117	87	95	132	163	136	98	103	100
Quarters—									
First.....	102	89	93	91	108	93	88	80	89
Second.....	97	85	90	96	145	102	84	77	85
Third.....	97	86	90	106	155	111	86	78	87
Fourth.....	106	86	93	121	156	125	94	95	96
Year.....	100	87	91	104	141	108	88	82	89

PRICE SECTION WEIGHTED INDEX NUMBER SEPARATED INTO CONTROLLED AND UNCONTROLLED PRICES, 1916-1918

Base Average Prices, July, 1913, to June, 1914 = 100

	Rubber, Paper, and Fiber Group			Metals Group			Fuels Group		
	Con- trolled (21)	Uncon- trolled (98)	All (119)	Con- trolled (49)	Uncon- trolled (67)	All (116)	Con- trolled (32)	Uncon- trolled (31)	All (63)
1916—Months—									
January.....	132	93	103	141	186	147	105	111	106
February.....	122	96	104	148	203	154	106	115	107
March.....	130	99	109	164	201	168	109	120	109
April.....	124	103	112	168	212	174	114	120	112
May.....	114	105	112	166	209	171	114	123	113
June.....	106	106	111	165	197	169	114	123	113
July.....	101	107	112	165	185	167	113	123	113
August.....	102	109	114	169	181	170	107	123	110
September.....	102	111	117	172	181	172	105	118	109
October.....	106	113	120	177	187	176	109	117	111
November.....	111	116	123	202	196	202	119	119	120
December.....	125	119	129	220	202	218	123	110	122
Quarters—									
First.....	128	96	106	150	197	155	107	115	107
Second.....	114	104	112	167	206	171	114	123	113
Third.....	102	109	114	169	182	171	108	121	111
Fourth.....	114	116	124	199	195	199	117	118	118
Year.....	114	107	114	171	195	174	111	119	112
1917—Months—									
January.....	133	127	138	230	199	226	131	127	129
February.....	139	129	141	237	205	234	136	133	133
March.....	144	130	143	251	210	247	134	134	131
April.....	142	135	146	267	205	260	173	135	163
May.....	150	136	148	285	206	276	182	137	172
June.....	147	136	147	330	205	315	184	137	173
July.....	140	135	144	350	205	333	178	140	168
August.....	140	135	143	328	198	313	*178	140	169
September.....	142	142	149	*295	192	283	176	142	165
October.....	139	142	147	234	188	228	176	142	164
November.....	138	141	146	212	190	209	179	144	167
December.....	138	140	145	211	186	208	180	148	170
Quarters—									
First.....	138	129	141	239	205	235	134	131	131
Second.....	146	136	147	296	206	286	180	136	170
Third.....	141	137	145	325	199	310	177	140	167
Fourth.....	138	141	146	219	188	215	178	145	167
Year.....	141	136	145	270	199	262	167	138	158
1918—Months—									
January.....	147	142	148	212	181	208	182	155	173
February.....	140	144	148	212	179	209	182	157	174
March.....	*144	144	150	212	183	209	184	159	175
April.....	149	150	155	211	181	208	215	161	200
May.....	156	157	162	212	189	209	219	167	204
June.....	155	160	165	212	190	210	215	169	202
July.....	156	159	164	214	197	212	215	168	201
August.....	155	160	166	215	207	214	216	168	202
September.....	153	161	166	215	206	214	218	169	204
October.....	146	161	165	217	205	216	218	169	204
November.....	143	161	163	217	201	216	224	166	207
December.....	139	160	162	212	200	211	224	166	207
Quarters—									
First.....	143	143	149	212	181	209	182	157	174
Second.....	153	156	161	212	187	209	216	166	202
Third.....	155	160	165	215	203	213	216	168	202
Fourth.....	143	161	163	216	202	214	222	167	207
Year.....	149	155	160	213	193	211	209	164	196

* Price control began during month.

AMERICAN CONTROL OVER PRICES

33

PRICE SECTION WEIGHTED INDEX NUMBER SEPARATED INTO CONTROLLED AND UNCONTROLLED PRICES, 1913-1915

Base Average Prices, July, 1913, to June, 1914 = 100

	Building Materials Group			Chemicals Group		
	Controlled (42)	Uncontrolled (107)	All (149)	Controlled (75)	Uncontrolled (167)	All (242)
1913—Months—						
January.....	108	100	104	102	103	103
February.....	108	101	104	102	103	104
March.....	109	101	105	103	103	104
April.....	110	101	105	103	102	103
May.....	110	101	105	103	102	103
June.....	110	101	105	102	102	102
July.....	104	101	102	102	102	102
August.....	104	101	102	102	101	101
September.....	104	102	103	101	102	101
October.....	100	101	100	100	100	100
November.....	99	100	100	100	101	100
December.....	99	100	100	100	101	101
Quarters—						
First.....	108	101	104	102	103	103
Second.....	110	101	105	103	102	103
Third.....	104	101	103	102	102	102
Fourth.....	99	100	100	100	100	100
Year.....	106	101	103	102	102	102
1914—Months—						
January.....	98	100	99	99	99	99
February.....	98	100	99	99	99	99
March.....	99	100	99	99	100	100
April.....	98	99	99	99	99	99
May.....	98	99	98	99	98	98
June.....	98	99	98	98	99	99
July.....	97	99	98	98	98	98
August.....	97	99	98	99	99	99
September.....	98	99	98	101	107	106
October.....	93	98	96	99	108	105
November.....	92	98	95	98	111	106
December.....	91	97	94	98	109	105
Quarters—						
First.....	98	100	99	99	99	99
Second.....	98	99	98	99	99	99
Third.....	97	99	98	99	101	101
Fourth.....	92	98	95	98	109	105
Year.....	96	99	98	99	102	101
1915—Months—						
January.....	90	96	93	98	135	123
February.....	91	96	93	99	141	126
March.....	91	96	93	99	142	126
April.....	91	96	93	107	147	133
May.....	92	96	94	108	144	132
June.....	92	97	94	108	154	137
July.....	93	100	96	125	158	146
August.....	93	99	95	129	158	148
September.....	93	99	95	141	163	155
October.....	104	101	101	152	166	162
November.....	106	100	101	163	171	172
December.....	106	101	102	173	174	178
Quarters—						
First.....	91	96	93	98	139	125
Second.....	92	96	94	107	148	134
Third.....	93	100	95	132	159	149
Fourth.....	105	101	102	163	170	171
Year.....	95	98	96	125	154	145

PRICE SECTION WEIGHTED INDEX NUMBER SEPARATED INTO CONTROLLED AND UNCONTROLLED
PRICES, 1916-1918

Base Average Prices, July, 1913, to June, 1914 = 100

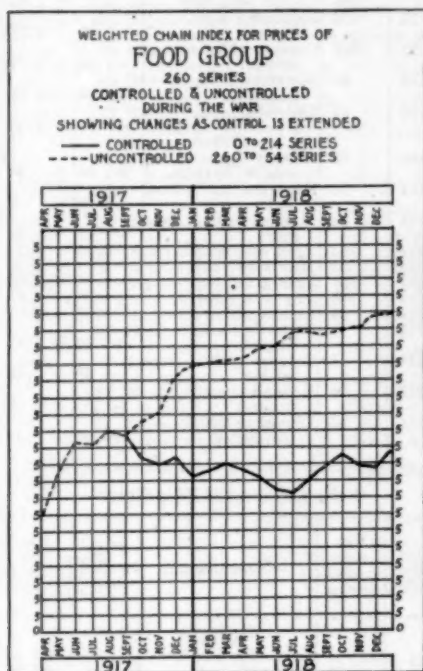
	Building Materials Group			Chemicals Group		
	Controlled (42)	Uncontrolled (107)	All (149)	Controlled (75)	Uncontrolled (167)	All (242)
1916—Months—						
January.....	113	108	109	196	177	189
February.....	114	111	111	216	181	200
March.....	115	112	112	218	181	201
April.....	113	117	113	216	176	198
May.....	114	118	113	200	171	188
June.....	114	118	113	197	170	185
July.....	111	117	112	177	163	175
August.....	111	117	112	164	156	166
September.....	111	117	112	160	153	162
October.....	119	118	116	163	152	162
November.....	120	119	118	163	152	163
December.....	121	122	119	167	149	162
Quarters—						
First.....	114	110	110	210	179	196
Second.....	114	118	113	205	172	190
Third.....	111	117	112	167	158	168
Fourth.....	119	120	118	164	151	162
Year.....	115	116	114	187	165	179
1917—Months—						
January.....	129	132	129	166	145	159
February.....	130	133	130	167	142	157
March.....	131	135	132	172	141	159
April.....	157	141	146	179	142	163
May.....	158	144	148	190	152	172
June.....	159	148	151	192	157	174
July.....	164	151	155	196	162	180
August.....	164	152	155	203	161	183
September.....	164	153	156	217	163	190
October.....	165	153	157	217	167	193
November.....	*167	155	159	*213	167	191
December.....	167	155	159	221	167	193
Quarters—						
First.....	130	134	130	169	143	158
Second.....	158	144	148	188	150	170
Third.....	164	152	155	206	162	184
Fourth.....	166	154	158	217	167	192
Year.....	155	146	148	195	156	176
1918—Months—						
January.....	174	161	165	207	166	186
February.....	175	160	165	223	165	192
March.....	177	167	169	224	166	192
April.....	184	175	176	224	167	192
May.....	186	178	179	212	170	190
June.....	187	180	181	207	171	189
July.....	187	184	182	192	172	184
August.....	188	186	184	193	173	186
September.....	189	190	186	196	174	188
October.....	186	190	185	193	178	190
November.....	187	190	186	192	179	193
December.....	186	188	185	174	178	183
Quarters—						
First.....	176	162	167	218	166	190
Second.....	186	178	179	215	169	190
Third.....	188	187	184	194	173	186
Fourth.....	186	189	185	186	178	189
Year.....	184	179	179	203	172	189

* Price control began during month.

index is a comparison of prices still uncontrolled by the end of each month with identical series for the month preceding.

The weighted chain index of "all commodities," taking into account 1,366 individual series which represent the general price level, moved per-

upward. Each month, however, some of these uncontrolled commodities were brought under control and the behavior of the controlled chain index is markedly different. The government had begun to control prices in earnest by September, and the September controlled prices fell 8.05 per cent below their own August level, while those under control in October fell 14.78 per cent below their own September level. The controlled chain index thus, contrary to the movement of its companion index, made an enormous drop at the beginning of control and from November, 1917, until the armistice, held relatively stable. The movement of the food group index, significantly, is very like that of "all commodities" in which it has a large weighting. The clothing group chain index shows that the controlled series went somewhat higher in their monthly rises between May and September, 1918, than those not under control, and then fell below. The outstanding features of the chain index for the metals group are the extent to which prices were scaled from previous heights and the strength with which they were held afterward. Metal prices, in September, 1917, were brought 9.32 per cent below their August level; in October they were brought 24.82 per cent below their September level; and in November they were brought 9.68 per cent below their October level. Metal prices, once reduced to this lower level, show scarcely the variation of 1 per cent up to the signing of the armistice. The fuels group chain index shows a fairly stable price movement except for the enormous increase of 20.9 per cent in April, 1918, the beginning of the new "coal year" when



Weighted Chain Index for Prices.—Food group (268 series) controlled and uncontrolled during the war, showing changes as control is extended. (Controlled, 0-214 series; uncontrolled, 268-54 series.)

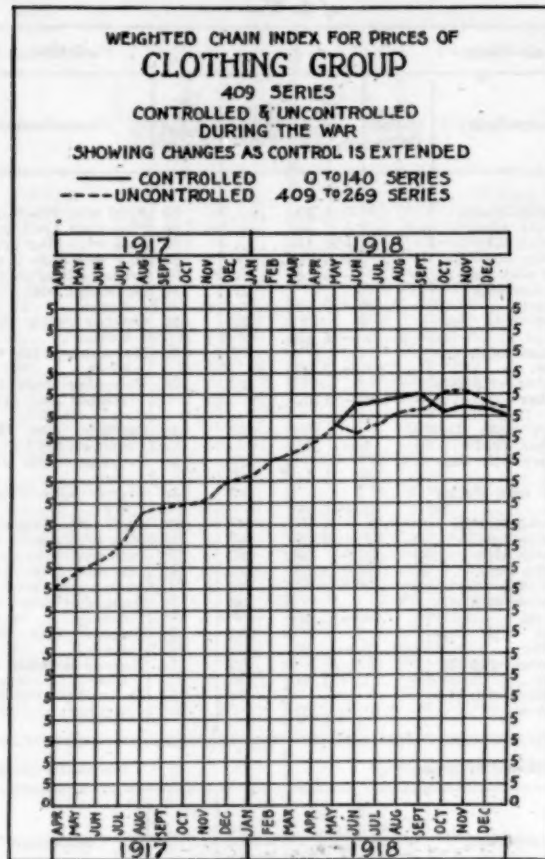
sistently upward each month from our entrance into the war until August, 1917. Regulation began in September and the "all commodities" chain index from that point is separated into controlled and uncontrolled. The uncontrolled lot throughout the remainder of the war, with a most curious abandon of the other index, moved steadily

CHAIN INDEX OF CONTROLLED AND UNCONTROLLED PRICES
Showing Weighted Rise or Fall, by Per Cents, of Controlled and Uncontrolled Prices for Each Month of the War

All Commodities					Food Group				
Controlled Series	Uncontrolled Series	Comparison	Controlled Prices	Uncontrolled Prices	Controlled Series	Uncontrolled Series	Comparison	Controlled Prices	Uncontrolled Prices
		1917					1917		
....	1,366	April with March .....	....	+9.73	....	268	April with March .....	....	+13.21
....	1,366	May with April .....	....	+4.44	....	268	May with April .....	....	+7.38
....	1,366	June with May .....	....	+4.13	....	268	June with May .....	....	-.79
....	1,366	July with June .....	....	+4.23	....	268	July with June .....	....	+4.20
....	1,366	August with July .....	....	-1.61	....	268	August with July .....	....	-1.35
50	1,316	September with August	-8.05	+1.94	12	256	September with August	-7.19	+4.75
66	1,300	October with September	-14.78	+1.11	21	247	October with September	-1.95	+1.02
266	1,100	November with October	-.12	+3.64	185	83	November with October	+1.83	+10.24
294	1,072	December with November	-4.60	+1.75	185	83	December with November	-5.77	+3.35
		1918					1918		
318	1,048	January with December, 1917	+1.25	+1.72	185	83	January with December, 1917	+1.46	+.45
352	1,014	February with January	+1.66	+.98	214	54	February with January	+1.99	+.36
362	1,004	March with February	-.90	+1.66	214	54	March with February	-1.17	+.40
387	979	April with March	-1.53	+3.30	214	54	April with March	-2.83	+2.33
469	897	May with April	-2.22	+.74	214	54	May with April	-3.24	+1.53
481	885	June with May	-1.45	+1.42	214	54	June with May	-1.85	+4.36
545	821	July with June	+2.83	+1.42	214	54	July with June	+4.05	-.15
570	796	August with July	+2.25	+.50	214	54	August with July	+3.03	-.04
572	794	September with August	+2.43	+2.08	214	54	September with August	+3.80	+.52
573	793	October with September	-1.63	+.51	214	54	October with September	-2.48	+.66
573	793	November with October	-.27	-.49	214	54	November with October	-.53	+3.59
573	793	December with November	+2.06	-1.04	214	54	December with November	+4.00	+.42
Clothing Group					Rubber, Paper, and Fiber Group				
Controlled Series	Uncontrolled Series	Comparison	Controlled Prices	Uncontrolled Prices	Controlled Series	Uncontrolled Series	Comparison	Controlled Prices	Uncontrolled Prices
		1917					1917		
....	409	April with March .....	....	+3.36	....	119	April with March .....	....	+2.59
....	409	May with April .....	....	+2.07	....	119	May with April .....	....	+1.65
....	409	June with May .....	....	+4.15	....	119	June with May .....	....	-.23
....	409	July with June .....	....	+6.41	....	119	July with June .....	....	-1.76
....	409	August with July .....	....	+1.58	....	119	August with July .....	....	-.18
....	409	September with August .....	....	+.03	....	119	September with August .....	....	+4.16
....	409	October with September .....	....	+.85	....	119	October with September .....	....	-.36
....	409	November with October .....	....	+4.01	....	119	November with October .....	....	-.49
....	409	December with November .....	....	+1.51	....	119	December with November .....	....	-.45
		1918					1918		
....	409	January with December, 1917 .....	....	+3.20	....	119	January with December, 1917 .....	....	+2.16
....	409	February with January .....	....	+1.11	....	119	February with January .....	....	0.00
....	409	March with February .....	....	+2.01	8	111	March with February	-0.26	+.92
....	409	April with March .....	....	+3.95	9	110	April with March	+.70	+4.23
67	342	May with April	+4.89	-.39	19	100	May with April	+4.93	+4.54
69	340	June with May	+.38	+.92	19	100	June with May	+.11	+1.70
122	287	July with June	+.87	+2.78	19	100	July with June	+.60	-.61
138	271	August with July	+.69	+.13	20	99	August with July	-1.54	+.92
140	269	September with August	-3.16	+3.81	20	99	September with August	+.05	-.02
140	269	October with September	+.45	+.54	21	98	October with September	-4.41	+.23
140	269	November with October	-.23	-1.78	21	98	November with October	-2.42	-.03
140	269	December with November	-1.26	-1.78	21	98	December with November	-2.63	-.73

CHAIN INDEX OF CONTROLLED AND UNCONTROLLED PRICES—Continued
Showing Weighted Rise and Fall, by Per Cents, of Controlled and Uncontrolled Prices for Each Month of the War

Metals Group					Fuels Group				
Controlled Series	Un-controlled Series	Comparison	Controlled Prices	Un-controlled Prices	Controlled Series	Un-controlled Series	Comparison	Controlled Prices	Un-controlled Prices
1917					1917				
....	116	April with March ..	....	+ 5.22	....	63	April with March ..	....	+17.83
....	116	May with April ..	....	+ 6.53	....	63	May with April ..	....	+ 3.96
....	116	June with May ..	....	+14.15	....	63	June with May ..	....	+ .72
....	116	July with June ..	....	+ 5.59	....	63	July with June ..	....	- 1.67
....	116	August with July ..	....	- 6.14	....	63	August with July ..	....	+ .24
11	105	September with August ..	- 9.32	- 9.46	27	36	September with August ..	- 6.07	+ 5.05
18	98	October with September ..	-24.82	- 4.83	27	36	October with September ..	- .20	+ .17
26	90	November with October ..	- 9.68	- 3.00	27	36	November with October ..	+ 2.68	+ .68
39	77	December with November ..	- .39	- 1.25	27	36	December with November ..	+ .70	+ 1.96
1918					1918				
39	77	January with December, 1917 ..	+ .16	- .95	27	36	January with December, 1917 ..	+ .88	+ 3.52
40	76	February with January ..	+ .39	- 1.14	27	36	February with January ..	+ .19	+ 1.17
42	74	March with February ..	- .15	+ 1.99	27	36	March with February ..	+ .56	+ 1.37
46	70	April with March ..	- .40	- 1.07	27	36	April with March ..	+20.90	+ 3.47
49	67	May with April ..	+ .07	+ 4.09	27	36	May with April ..	+ 1.13	+ 3.46
49	67	June with May ..	+ .22	+ .98	27	36	June with May ..	- 2.39	+ .87
49	67	July with June ..	+ .86	+ 3.35	27	36	July with June ..	- .16	- .48
49	67	August with July ..	+ .47	+ 5.13	32	31	August with July ..	+ .34	+ .15
49	67	September with August ..	+ .01	- .40	32	31	September with August ..	+ 1.17	+ .45
49	67	October with September ..	+ 1.10	- .60	32	31	October with September ..	0.00	0.00
49	67	November with October ..	+ .11	- 1.81	32	31	November with October ..	+ 2.53	- 1.56
40	67	December with November ..	- 2.61	- .51	32	31	December with November ..	0.00	- .06
Building Materials Group					Chemicals Group				
Controlled Series	Un-controlled Series	Comparison	Controlled Prices	Un-controlled Prices	Controlled Series	Un-controlled Series	Comparison	Controlled Prices	Un-controlled Prices
1917					1917				
....	149	April with March ..	....	+10.40	....	242	April with March ..	....	+2.47
....	149	May with April ..	....	+ 1.58	....	242	May with April ..	....	+6.46
....	149	June with May ..	....	+ 1.65	....	242	June with May ..	....	+2.00
....	149	July with June ..	....	+ 2.72	....	242	July with June ..	....	+2.65
....	149	August with July ..	....	+ .24	....	242	August with July ..	....	+1.67
....	149	September with August ..	....	+ .33	....	242	September with August ..	....	+4.00
....	149	October with September ..	....	+ .45	....	242	October with September ..	....	+1.08
6	143	November with October ..	+0.57	+ 1.15	22	220	November with October ..	+2.88	-1.13
16	133	December with November ..	- .19	+ .51	27	215	December with November ..	+2.54	-1.71
1918					1918				
16	133	January with December, 1917 ..	+3.91	+ 3.71	51	191	January with December, 1917 ..	+ .74	-4.83
16	133	February with January ..	+ .71	- .12	55	187	February with January ..	+1.23	+4.43
16	133	March with February ..	+1.86	+ 3.12	55	187	March with February ..	+ .33	+ .83
31	118	April with March ..	+4.26	+ 4.73	60	182	April with March ..	- .45	+ .45
31	118	May with April ..	+ .96	+ 1.73	62	180	May with April ..	-1.21	-2.41
31	118	June with May ..	+ .09	+ 1.57	72	170	June with May ..	-1.99	+ .47
42	107	July with June ..	+ .32	+ 1.68	72	170	July with June ..	-7.62	+ .09
42	107	August with July ..	+ .93	+ 1.11	75	167	August with July ..	-2.33	- .50
42	107	September with August ..	+ .09	+ 1.86	75	167	September with August ..	+1.19	+ .63
42	107	October with September ..	-1.47	0.00	75	167	October with September ..	-1.46	+2.39
42	107	November with October ..	+ .53	+ .35	75	167	November with October ..	- .36	+ .56
42	107	December with November ..	- .35	- 1.03	75	167	December with November ..	-9.44	- .95



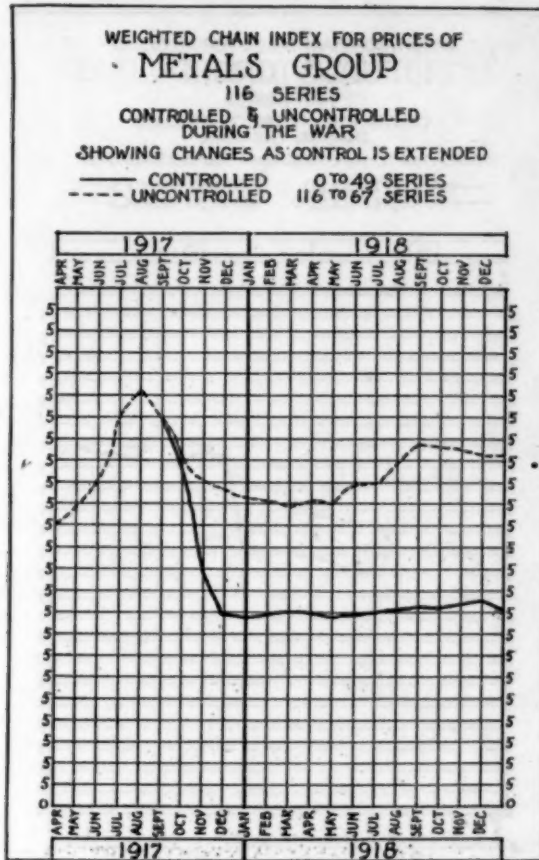
Weighted Chain Index for Prices.—Clothing group (409 series) controlled and uncontrolled during the war, showing changes as control is extended (Controlled, 0-140 series; uncontrolled, 409-269 series.)

the annual contracts, under which a very large proportion of all coal mined is sold, were reversed.

RELATIVE POINTS BELOW WHICH 50 BASIC COMMODITIES WERE PEGGED

One of the primary motives behind price control during the war was the desire to stimulate a maximum production. The various committees, though always desirous of holding prices within reasonable bounds, were anxious primarily to assure a full out-

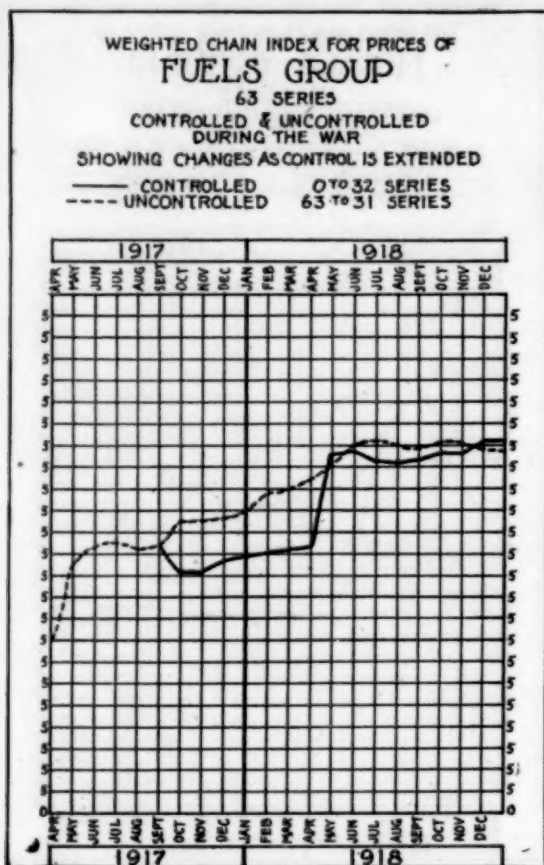
put and did so frequently by means of liberal price allowances. They undertook to meet these ends by a rather extensive regulation over the prices of important basic raw materials. The government early regulated wheat, and then as occasion demanded it extended control to various other raw materials such as copper, iron ore, pig iron, lumber, wool, hides and skins, and cotton yarns. A study of the schedules of these fixed prices gives a very poor notion of the relative market



Weighted Chain Index for Prices.—Metals group (116 series) controlled and uncontrolled during the war, showing changes as control is extended. (Controlled, 0-49 series; uncontrolled, 116-67 series.)

heights at which each regulation began, both with respect to its own pre-war level and with respect to that of other controlled prices. It is of significance to note whether government interference with prices began generally at the same relative height, or whether other factors dictated the time and character of the government control. An equally significant inquiry is the relation which the fixed prices bore to the market prices prevailing at the time regulation set in.

There have been here chosen from the controlled commodities 50 representative series, which typify the common practices of government regulation. The actual market prices at wholesale by months from January, 1913, through December, 1918, for each of these controlled basic commodities were turned into relative prices by making the average pre-war price (July 1, 1913, to June 30, 1914) equal 100. Each relative price thus is strictly comparable with any other.

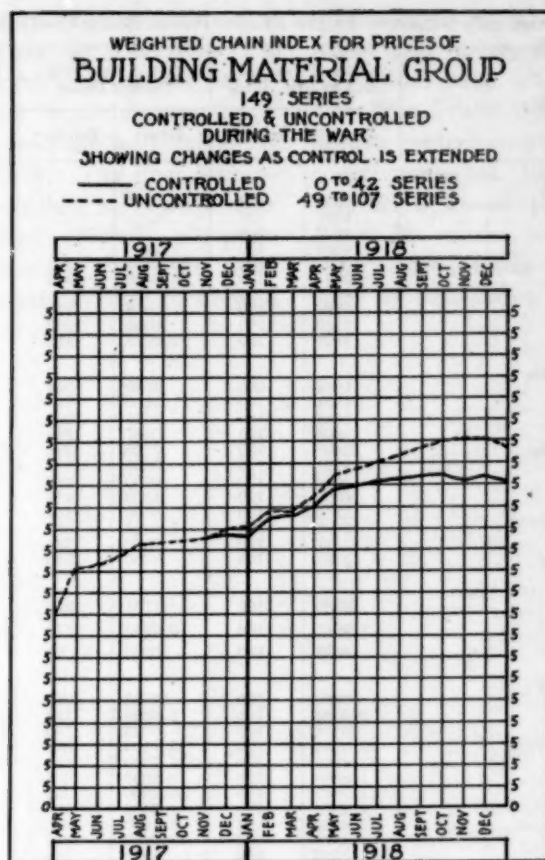


Weighted Chain Index for Prices.—Fuel group (63 series) controlled and uncontrolled during the war, showing changes as control is extended. (Controlled, 0-32 series; uncontrolled, 63-31 series.)

Relative prices of this character, for those who seek simply the relation of any market price when government control began to its corresponding pre-war price, are more accurate than the index numbers or chain indexes of groups and classes. The relative prices of individual raw materials controlled, for the point in mind, have the decided advantage of standing as separate series precisely at the height they had attained when taken hold of by the government. They, moreover, are

free from weights and permit of a study of price rises pure and simple.

The market price for calfskins, No. 1, country, 8 to 15 pounds, at Chicago, for example, was \$0.1984 per pound (made equal to 100) before the war in Europe. It had reached \$0.4040 per pound (found equal to 204 when compared with the pre-war price) in May, 1918, when the government determined upon control of calfskin prices. The government set the price at \$0.34 per pound (similarly found equal to



Weighted Chain Index for Prices.—Building materials group (149 series) controlled and uncontrolled during the war, showing changes as control is extended. (Controlled, 0-42 series; uncontrolled, 149-107 series.)

171). It is clear that while the market had sent calfskin prices from 100 in 1913-14 to 204 by May, 1918, the government then fixed them at a maximum of 171, by which one may make for himself a similar analysis for each of the 50 following commodities. It should be remembered, of course, that the method of control for all commodities was not identical. Wheat, for example, was given a minimum rather than a maximum price. A summary of the relative price of 50 selected

commodities before the European war—the relative market price which prevailed when the government determined upon regulation and the relative price at which the government fixed its initial price—follows:

THE LIFTING OF GOVERNMENT CONTROL OVER PRICES

The government began lifting its war-time control over prices immediately after the signing of the armistice, and had, in fact, virtually restored

A SUMMARY OF ACTUAL AND RELATIVE PRICES BELOW WHICH BASIC COMMODITIES WERE FIXED

Commodity	Pre-war Price (July, 1913 to June, 1914)		Market Price When Control Began		Government Initial Fixed Price	
	Actual	Relative	Actual	Relative	Actual	Relative
FOODS						
1. Bacon.....	\$0.1298	100	.....	.....	.....	.....
2. Beef.....	.1297	100	.....	.....	.....	.....
3. Cattle.....	9.1022	100	.....	.....	.....	.....
4. Corn.....	.6859	100	.....	.....	.....	.....
5. Cottonseed oil.....	.0607	100	\$0.1750	288	\$0.1750	288
6. Hogs, live.....	8.3094	100	16.9500	204	15.5000	187
7. Oats.....	.4005	100	.....	.....	.....	.....
8. Rice.....	.0526	100	.0938	178	.0913	174
9. Sugar, raw.....	.0340	100	.0690	203	.06005	176
10. Wheat.....	.8901	100	2.7875	313	2.1700	244
CLOTHING						
11. Calfekins.....	.1984	100	.4040	204	.3400	171
12. Cattle hides.....	.1861	100	.3110	167	.3300	177
13. Cotton duck.....	.1550	100	.3425	221	.3350	216
14. Cotton linters.....	.0205	100	.0487	238	.0467	228
15. Cotton weaving yarn.....	.2438	100	.7120	292	.6650	273
16. Leather, harness.....	.4121	100	.6800	165	.6800	165
17. Leather, belting.....	.5042	100	.9700	192	.9600	190
18. Print cloths.....	.0335	100	.1300	388	.1125	336
19. Rags, woollen.....	.1250	100	.5650	452	.6200	496
20. Sheetting.....	.0606	100	.2300	380	.1750	289
21. Wool, domestic.....	.2317	100	.7500	324	.7500	324
22. Wool, Buenos Aires.....	.3083	100	.7400	240	.7400	240
RUBBER, PAPER, AND FIBER						
23. Manila fiber.....	.0780	100	.7731	350	.2600	333
24. Paper, newsprint.....	1.9046	100	3.2450	170	3.1000	163
25. Rubber, crude.....	.6123	100	.6000	98	3.5000	184
					.6300	103
METALS						
26. Copper, electrolytic.....	.1492	100	.2545	171	.2350	158
27. Iron, Ore.....	3.3083	100	5.0500	153	5.0500	153
28. Lead, pig.....	.0418	100	.0625	150	.0805	193
29. Pig iron, basic.....	13.3183	100	42.7500	321	33.0000	248
30. Quicksilver.....	38.8558	100	121.7500	313	105.0000	270
31. Steel bars.....	1.2600	100	3.8800	308	2.9000	230
32. Steel billets.....	21.7917	100	55.2500	254	47.5000	218
33. Steel plates.....	1.2600	100	7.0500	560	3.2500	258
34. Steel structural shapes.....	1.4600	100	5.1900	355	3.0000	205
35. Tinplate.....	3.4375	100	12.0000	349	7.7500	225
36. Zinc sheets.....	.0735	100	.1800	245	.1500	204
FUELS						
37. Coal, anthracite.....	3.7800	100	4.9000	130	4.8000	127
38. Coal, bituminous.....	1.0900	100	2.5400	233	2.0000	183
39. Coke, Connellsville.....	2.0625	100	11.7500	570	6.0000	291
40. Petroleum, crude.....	.9725	100	2.2500	231	.....	.....
BUILDING MATERIALS						
41. Cement, Portland.....	1.5800	100	2.5600	162	1.8500	117
42. Douglas fir.....	7.9167	100	18.5000	234	18.5000	234
43. Pennsylvania hemlock.....	24.8300	100	32.6200	131	32.0000	129
44. Southern or yellow pine.....	13.8750	100	27.5000	198	24.0000	173
45. New England spruce.....	24.2600	100	46.3700	191	45.0000	185
CHEMICALS						
46. Alcohol, wood.....	.4558	100	1.3500	296	.7900	173
47. Arsenic.....	.0310	100	.1600	516	.0900	290
48. Caustic soda.....	.0181	100	.0490	271	.0350	193
49. Nitrate of soda.....	2.3183	100	4.4938	194	4.2250	182
50. Sulphuric acid.....	.0085	100	.0125	147	.0090	106

prices to free competition by the end of 1918. Some controls were continued a short while beyond November 11, 1918, at requests from the industries to allow for gradual readjustment, or where it was required that particular

transactions already underway be completed.

The War Industries Board told its commodity chiefs after the armistice was signed that the war was over, and repeatedly refused to enter into new

regulations. It closed its doors to new business officially on December 31, 1918. The price-fixing committee refused numerous requests to continue price fixing, in the main, and disbanded on March 1, 1919. The Fuel Administration relinquished its control over fuels and closed officially all price control on January 31, 1919. The Food Administration, though obliged

to continue certain controls, such as wheat and sugar, lifted most of its regulations soon after the armistice. The War Trade Board continued its license control over exports and imports somewhat longer than other boards continued price control, but closed its official work on June 30, 1919, and went into the State Department for liquidation.

The Trend in Wholesale Prices for the Products of American Farms During the War Period

By CLYDE L. KING, PH.D.

Wharton School of Finance and Commerce, University of Pennsylvania

THE chart on the next page pictures the relative increase in the wholesale price of farm products through 1919 up to 1920 by months as compared with the increase in the wholesale price of all other commodities. The index numbers used for both curves are those prepared by the Bureau of Labor Statistics. The prices for the year 1913 are taken as equal to one hundred in both curves. The price on all farm products has increased more rapidly than has the price for all commodities including farm products. As a basis for comparison, this chart also includes the relative increases in the values (dollars) of (1) all crops, (2) animals and animal products and (3) all farm products.

While this chart shows that the prices of all farm products have kept pace with and exceeded the increase in the price of all commodities, an examination of prices by products shows that the wholesale prices for meats and for poultry and dairy products did not rise as rapidly as did the prices for all commodities nor for all farm products.

Charts Nos. 2 and 3 on page 45 from the bulletins of the War Industries Board show the relative wholesale prices of (a) poultry and dairy products and (b) livestock, meats and fats as compared with the prices of all commodities from January, 1913, to December, 1918, inclusive. In

neither of those groups of commodities did prices increase as rapidly as did the general price level.

Chart No. 4 on page 47 compares the increase in the price received by the milk producer in the Philadelphia and Pittsburgh districts from 1913 to 1919 inclusive with the relative increase in the price of all other commodities. As shown by the years 1913 and 1914 the normal seasonal variation in price to milk producers is above and below the current price level. In 1916 the price to producers in the season of greatest production fell as low as the price for milk in previous seasons, while the prices of all other commodities tended upward. In the years 1915, 1916 and 1917 the price of milk to these producers did not increase as rapidly as did the general price level. In 1918 and 1919, however, the milk producer in these districts received a seasonal increase above as well as below the price level of other commodities and an annual average price equal to the price level of other commodities. During 1918 and 1919 the milk producer in these districts was getting a price for his product fully equal to the price increase in all other commodities. In these territories, therefore, while the prices to milk producers lagged in 1915, 1916 and 1917, they fairly caught up with the current price level in 1918 and 1919.

I have used as a basis for this com-

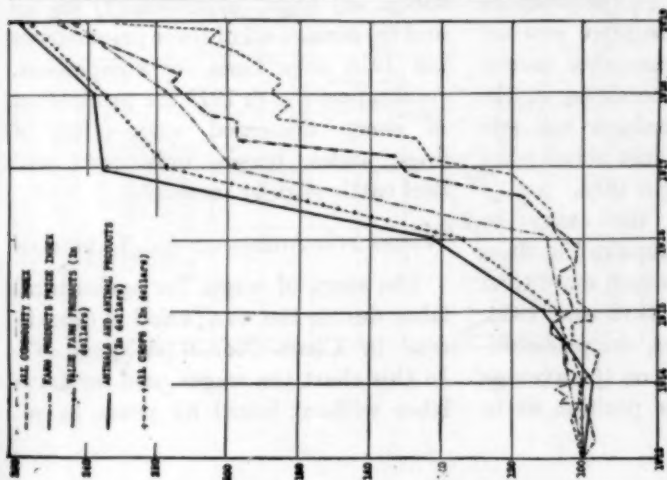


CHART No. 1

WHOLESALE PRICE OF FARM PRODUCTS AND ALL COMMODITIES AND RELATIVE INCREASE IN THE VALUE OF ALL CROPS, ANIMAL PRODUCTS AND ALL FARM PRODUCTS, 1913=100.

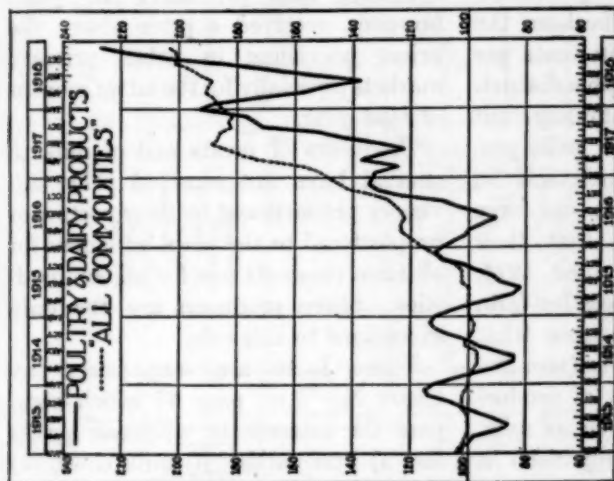


CHART No. 2

RELATIVE WHOLESALE PRICES RECEIVED FOR POULTRY AND DAIRY PRODUCTS, 1913-1918, COMPARED WITH THE WHOLESALE PRICE RECEIVED BY PRODUCERS*

- * From *War Industries Board Bulletin No. 21*, page 6. Relative Prices of Poultry: Dressed Fowls, western; live fowls, choice—by months, January, 1913, to December, 1918. (Average quoted prices, July, 1913, to June, 1914=100.)

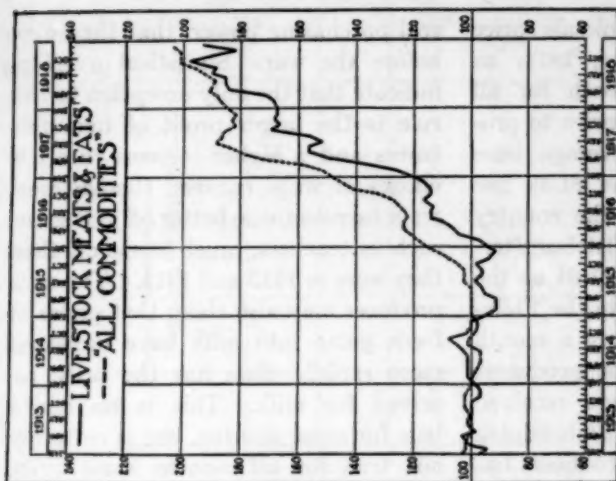


CHART No. 3

THE RELATIVE PRICES OF LIVESTOCK, MEATS, AND FATS AS COMPARED WITH ALL OTHER COMMODITIES, JANUARY, 1913, TO DECEMBER, 1918*

- * Weighted Index Number by months. (Average quoted prices for July, 1913, to June, 1914=100.)

parison the average wholesale price from July, 1913, to June, 1914, as equal to one hundred both for all commodities and for the price to producers of milk. This average base price for this period was \$1.49 per cwt. to the producer at the country receiving station in the Pittsburg territory as compared with \$1.64 at the country receiving station in the Philadelphia district. For many a month during the war period the producers in both of these districts received identical prices. The Philadelphia curve showing price to producers has not the extremes of the producers' curve in Pittsburg just because the base or divisor was fifteen cents per cwt. higher in the Philadelphia district.

To this method of finding out whether the dollar of the milk producer now purchases as much as it did before the war, producers can urge three objections: One is that their price from July, 1913, to June, 1914, was not a fair price. Prices for farm products depend as much upon what else a farmer can do with his farm and his labor as upon the cost of producing some one product, such as milk. On the basis of this comparison it would be difficult now for the producer to prove that this base price was not fair. But even if reasonable corrections were made by increasing it, the dollar of the milk producer will still buy now by this test just about what it bought in 1913 and in 1914.

Another objection that may be urged is that other groups in the cities are getting relatively much more than they were getting in 1913 and 1914. On this point, however, the probabilities are that all groups on the average are in about the same position as to

real purchasing power, that they were before the war. Statistical averages indicate that the only exception to this rule is the larger profit of manufacturers and a higher increase to a few classes of wage earners, though most wage earners are no better off and some, such as teachers, much worse off than they were in 1913 and 1914. The milk producer may also claim that prices of feeds going into milk have increased more rapidly than has the price received for milk. This is no doubt true for some months, but is certainly not true for all months since 1913. Pittsburg milk producers last year, however, received a price above the prices prevailing in other primary markets especially for the latter months of that year.

Producers of meats and of milk in general have not received price advances proportional to their costs nor proportional to the price advances for all farm products nor for all commodities. Sheep producers are the only exceptions to this rule.

These facts are emphasized by Chart No. 5 on page 47 which compare the increase in wholesale prices for (a) beef cattle, (b) milk cows, (c) sheep, (d) hogs, (e) mules, (f) horses and (g) corn. All of these price curves use 1913 as a basis for comparison. As compared with 1913 the production of sheep decreased while that of hogs, mules, horses, milk cows and beef cattle slightly increased.

WAGES FOR AGRICULTURAL LABORERS

The story of wages for agricultural labor during the war period is quickly read in Chart No. 6 on page 47. In this chart the wages paid for farm labor without board by years as re-

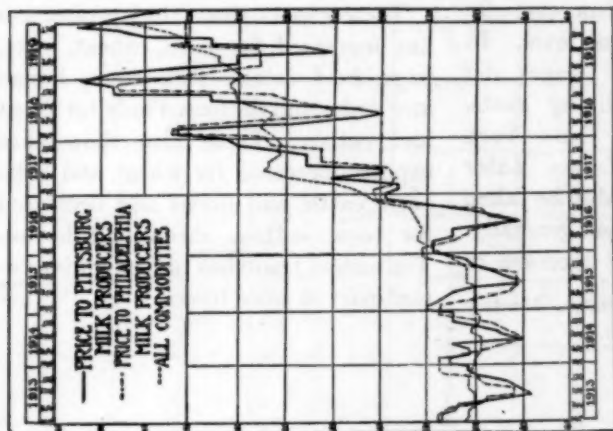


CHART No. 4

THE RELATIVE INCREASE IN THE PRICE OF MILK TO PRODUCERS IN THE PITTSBURGH DISTRICT AS COMPARED WITH THE INCREASE IN THE PRICE OF ALL OTHER COMMODITIES, 1913 TO 1918, AND WITH THE INCREASE IN PRICE TO PHILADELPHIA PRODUCERS. (The average price for July, 1913, to June, 1914 = 100.)

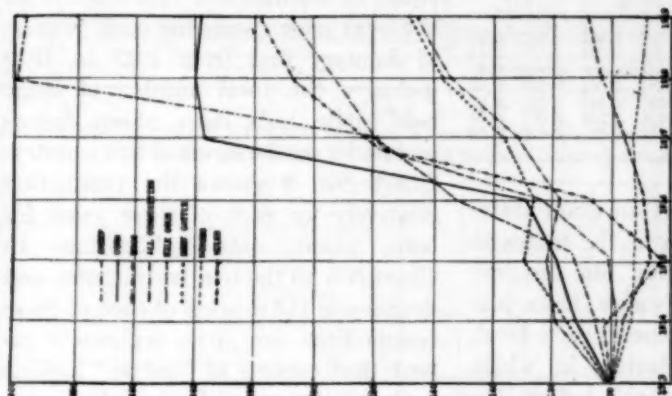


CHART No. 5

WHOLESALE PRICES FOR BEEF CATTLE, MILK COWS, SHEEP, CORN, HOGS, HORSES, MULES AND ALL COMMODITIES, 1913-1919. (AVERAGE WHOLESALE PRICES FOR 1913 = 100.)

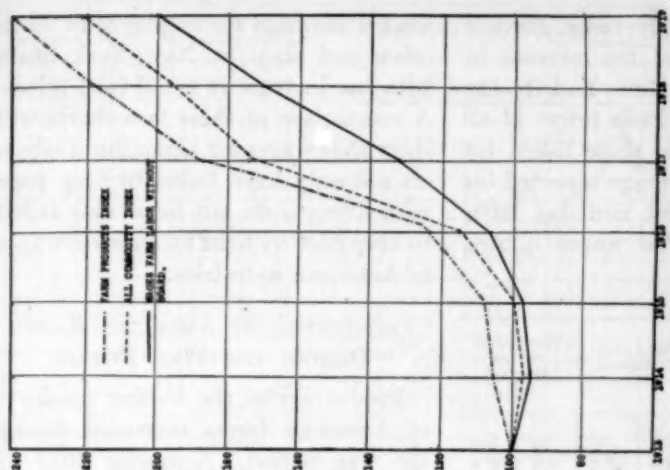


CHART No. 6

WAGES PAID FOR FARM LABOR WITHOUT BOARD COMPARED WITH INCREASE IN THE WHOLESALE PRICE FOR ALL COMMODITIES AND THE INCREASE IN THE WHOLESALE PRICE FOR ALL FARM PRODUCTS, 1913-1919. (WAGES AND PRICES FOR 1913 = 100.)

ported in the Monthly Labor Review is compared with (a) the increase in prices for all commodities and (b) the increase in the wholesale prices of all farm products. The wage taken for farm labor is the average reported for day labor for harvest and day labor not at harvest. The wages quoted are as follows:¹

	By the Month		Day Labor at Harvest (1)		Day Labor Not at Harvest (2)	
	With Board	Without Board	With Board	Without Board	With Board	Without Board
1913.....	21.38	30.31	1.57	1.94	1.16	1.50
1914.....	21.05	29.88	1.55	1.91	1.13	1.45
1915.....	21.26	30.15	1.56	1.92	1.13	1.47
1916.....	23.25	32.83	1.69	2.08	1.25	1.62
1917.....	28.87	40.43	2.08	2.54	1.56	2.02
1918.....	34.92	47.07	2.65	3.22	2.07	2.63
1919.....	39.82	56.29	3.15	3.83	2.45	3.12

It is difficult to get an exact statement as to increases in the wages in the different industries. In the iron and steel industry wages have just kept pace with the general price level. In the clothing industry, in which workers were underpaid before the war, wages have increased more rapidly than did the general price level. In most industries however wages did not keep pace with living costs. Chart No. 7 from the New York State Industrial Commission *Labor Market Bulletin* can probably be taken as typical for wage increases generally. This chart compares the increase in

weekly earnings for employes in both office and shop in New York State with the increase in retail food prices. A comparison of these two charts will show that wages for agricultural laborers not only have failed to keep pace with living costs but have also failed to keep pace with the increases in wages in American industries.

PRODUCTION OF AMERICAN FARMS DURING THE WAR PERIOD

Production of the leading products of American farms increased during the war period. Assuming 1913 as equal to one hundred Chart No. 8 on the next page shows for each year as of January first from 1913 to 1919 inclusive the total number of hogs, beef cattle, milk cows, sheep, horses and mules on the farms of this country. Chart No. 9 shows the production relatively for each of these years for corn, wheat, oats and cotton. In Chart No. 10 the relative increase and decrease in the exports of each of these commodities are given separately except that exports of "cattle" include both milk cows and beef cattle.

These charts show that production has increased for corn, wheat, oats, hogs, beef cattle, milk cows, horses and mules and decreased only for sheep and cotton. These also show that exports increased for wheat and oats, hogs, cattle and mules and decreased for corn, cotton, sheep and horses. The export trade has played an important part in price forces.

¹Average for the United States, Monthly Crop Reporter, December, 1919.

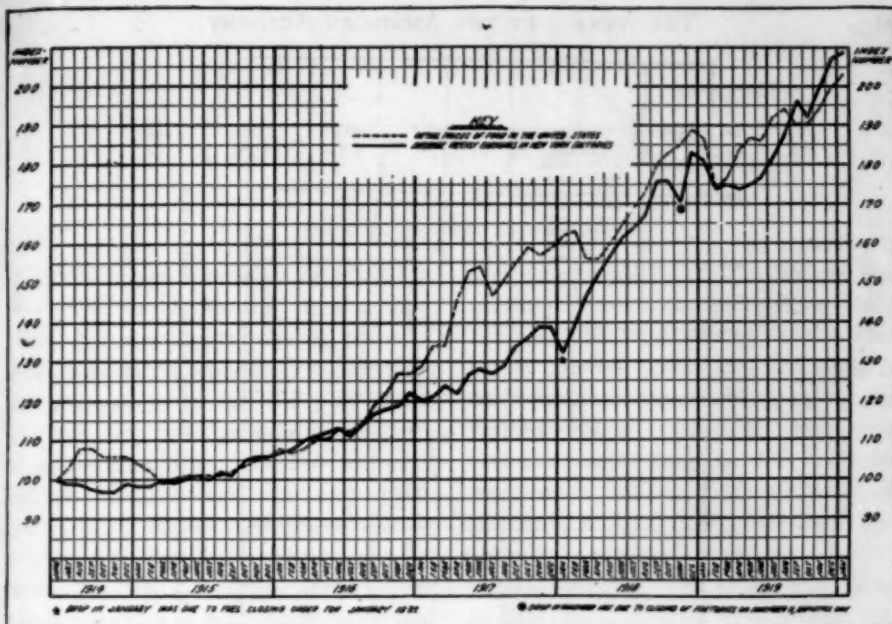


CHART No. 7
COMPARISON OF COURSE OF AVERAGE WEEKLY EARNINGS IN NEW YORK STATE FACTORIES WITH
COURSE OF RETAIL FOOD PRICES IN THE UNITED STATES.

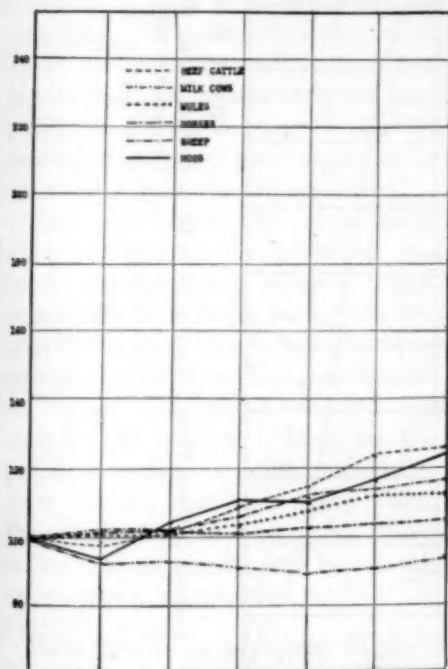


CHART No. 8
TOTAL NUMBER OF HOGS, BEEF CATTLE, MILK COWS, SHEEP, HORSES AND MULES ON THE
FARMS IN THE UNITED STATES, 1913-1919.
NUMBER IN 1913=100.

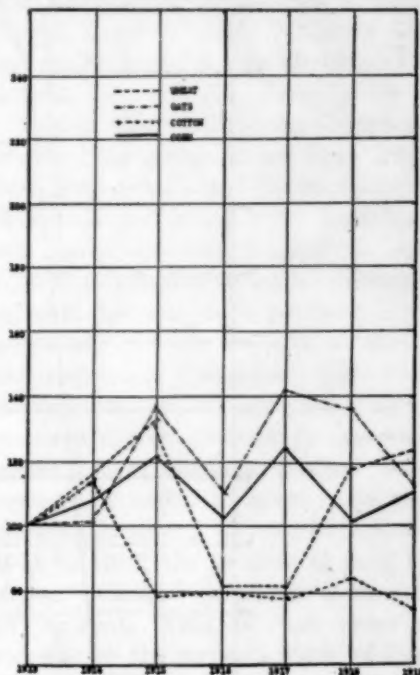


CHART No. 9
PRODUCTION OF CORN, WHEAT, OATS AND COTTON, 1913-1919. PRODUCTION IN
1913=100.

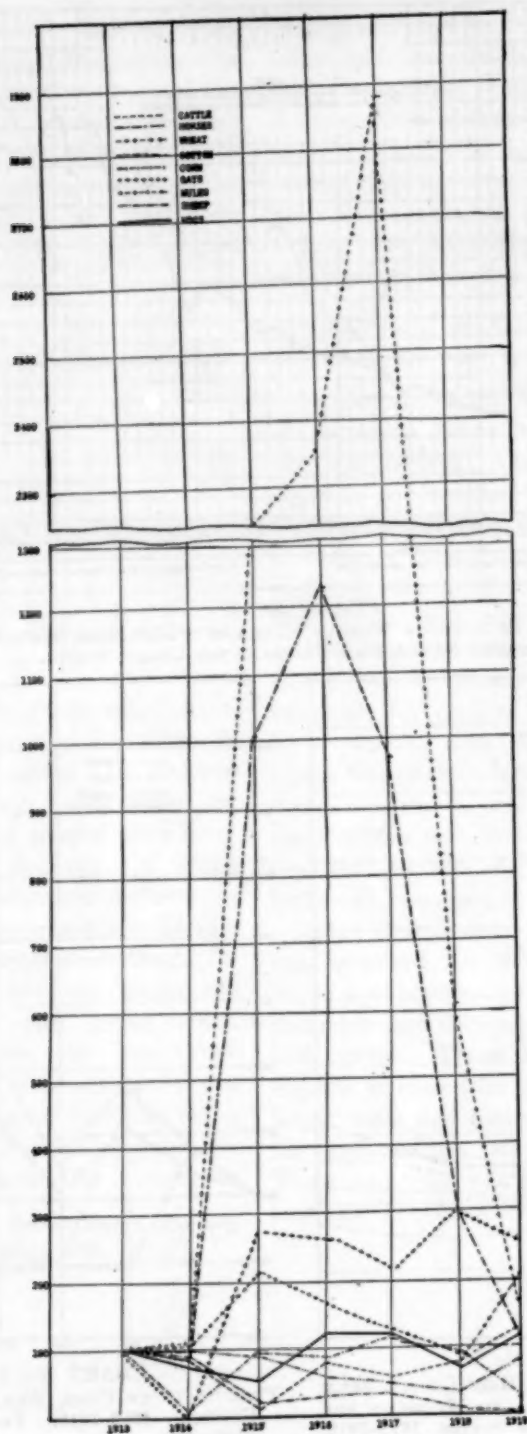


CHART No. 10
EXPORTS OF CORN, WHEAT, COTTON, OATS, HOGS, CATTLE, SHEEP, HORSES AND MULES FROM THE UNITED STATES, 1913-1919.
EXPORTS FOR 1913 = 100.

The After-War Fall in Meat Prices

By L. D. H. WELD

Swift & Company, Chicago, Ill.

DUN'S index number of wholesale prices shows that in January, 1920, the average wholesale price of meat was only 58 per cent higher than the average price for the year 1913, whereas the average wholesale price of all commodities was 105 per cent higher. Furthermore, since July, 1919, Dun's index shows that the wholesale price of meat had fallen 22 per cent (to January, 1920), whereas the average wholesale price of all commodities had risen 6 per cent during the same interval.

These facts are of peculiar significance at a time when the nation is complaining of constantly rising prices. It is not generally realized that during the past few months meat has been positively cheap as compared with other commodities, when pre-war prices, or prices of a year ago are considered.

The year 1919 was a decidedly abnormal one in the live-stock and meat trades. Prices reached unprecedentedly high levels during the first part of the year, only to be followed by spectacular declines which meant losses to many livestock producers, and also to the packers. What are the principal reasons for the remarkable price changes that have taken place? It is necessary to review conditions before and during the war before this question can be answered.

HOW THE WAR AFFECTED MEAT PRICES

Before the European war began, exports of beef from the United States

had practically ceased. Europe was getting her beef principally from South America, for the simple reason that cattle can be raised more cheaply in that part of the world than in the United States. Between the time that the import duty on meat had been removed in 1913 and the outbreak of the war, a little Argentine beef was actually imported into the United States. Europe was still depending on us for pork products (including fats) in considerable quantity, because the United States is the only country which has a large exportable surplus. South America and Australia do not raise hogs to any considerable extent.

During the war, the allied nations found it necessary to purchase their beef from the United States, because they could not afford to let their vessels make the long journey to and from South American ports. Foreign demand for our pork products also increased, and our exports increased tremendously. Coincident with this increase in export demand, there occurred a great increase in domestic production of cattle and hogs. The receipts of cattle in seven principal markets increased 82 per cent from 1914 to 1918; the receipts of hogs in eleven principal markets increased 36 per cent. This did not mean a decrease in the nation's stock of live animals, because the estimates of the Department of Agriculture revealed a continuing increase in the number of

animals on farms, at least up to and including January, 1919.

During the war, the domestic consumption of meat increased rather than decreased, in spite of the efforts of the Food Administration to curtail consumption. The campaign for saving undoubtedly kept the domestic consumption lower than it otherwise would have been, but it was largely counterbalanced by greater purchases on the part of millions of workmen who had received extraordinary advances in wages.

The net results of these factors was that during the war the prices of meats increased in about the same ratio as the prices of other commodities. Pork products went up more than the average; beef went up a little less than the average. This was the situation, in general terms, up to the time the armistice was signed in November, 1918.

THE BEEF-PRICE SITUATION

To explain the events since hostilities ceased it is necessary to consider beef and pork separately. As for beef, it was only natural that the disappearance of an unnatural foreign demand would bring down prices, and everybody expected this to happen. Export shipments continued for two or three months after the armistice, but as vessels became available for the long trip to South America and to Australia, beef exports practically ceased. The effect of this situation was felt in April, 1919, when cattle and beef prices began a considerable decline.

A bulletin issued by the United States Department of Agriculture on July 1, 1919, showed that wholesale

prices of beef decreased more rapidly, relatively, than the prices of live cattle. In other words, the differential between cattle prices and beef prices narrowed perceptibly. This was due partly to the fact that the prices that packers were able to realize on hides were advancing at the same time that cattle and beef prices were falling.

Cause of Advance in Hide Prices

Many people cannot understand why such a thing should happen, and say that the advance in hide prices must have been due to artificial manipulation. Such was not the case, however, because anyone who studies the situation will easily find out that the advance in hide prices was not peculiar to the United States. It was a world phenomenon, caused by large after-war demand for hides and leather by European nations, whose supply of leather had been used up, or worn out, during the war and in carrying on war operations. Except for about three weeks in May, Swift & Company lost money on cattle operations almost continually for about five months, including the sale not only of beef, but also of cured hides, refined oils and fats, and other cattle by-products. The same was true of the other large packers. Swift & Company's losses were so large during that period that the beef business for the whole year, 1919, showed a loss of about 70 cents per head of cattle.

Average prices of all grades of cattle and beef continued to decline through the rest of the year, and the Department of Agriculture's estimate for January 1, 1920, shows a decline in the number of cattle on farms. This indicates that the cattlemen, many of

whom have lost money during the past year, are adjusting their herds to peace conditions. The war demand stimulated production to such an extent that it resulted in such a large supply that it could not be marketed at a profitable price, after the export market disappeared. Cattle production is becoming adjusted to domestic demand, and will sooner or later bear its nominal relation to other agricultural crops so far as profitability is concerned.

THE PORK PRICE SITUATION

The ending of the war did not have the same effect on hog and pork prices. It was expected that the central European nations, which had been in the habit of obtaining pork and fats from the United States before the war, would renew their purchases after the war ceased. There were extremely heavy marketings of hogs during the first two months of 1919, due partly to the guaranteed price of $17\frac{1}{2}$ cents brought about by agreement between the Food Administration and the packers, and this kept the price from rising abruptly. After the first of March, however, European demand began to show itself, hog receipts fell off, the packers anticipated still further foreign demand, and the price became higher.

The price of hogs and pork products continued to climb until July, when live hogs were sold in Chicago for over 23 cents a pound—an abnormally high price. Then came the crash. This was due, not to the fact that Europe did not want our pork, but to the fact that Europe could not pay for it. Hog marketings became relatively light, but the packers had large supplies

of pork products in process of cure.

Early in August the British government appointed a commission to make purchases for England in the United States. This commission—in reality a single buyer for a large part of our exportable surplus—found that there was a considerable supply on hand in England and afloat, and announced that it would not buy much pork for two or three months. The bad financial situation in other European countries was reflected in the exchange situation, and exports suddenly fell off. The result was a precipitous decline in hog and pork prices during August, September and October.

The decline in hog and pork prices last summer and fall was perhaps the most spectacular that ever occurred—from over 23 cents to around 14 cents. It was a serious matter. Farmers lost money heavily. The packers lost heavily because of the decline in value of pork products. Swift & Company suffered a loss of over \$10,000,000 in six weeks on its stocks of pork products.

The Price of Pork Loins

One interesting feature of the decline in hog and pork prices was that the price of pork loins (from which are obtained pork chops and pork roasts) continued at its high level until November. This fact has been spread broadcast by the Federal Trade Commission as an indication that the packers were arbitrarily holding up the price of pork loins, even though the prices of hogs had tumbled.

The truth is that, when properly understood, the course of pork-loin prices furnishes as good a proof as any one could want that prices of meats are determined by conditions of supply

and demand, working out through competition. Pork loins are practically the only part of the hog that is sold as fresh meat, and constitute only about 12 per cent of all the meat from an animal. It has to be sold within a few days after the animal is killed (except for a small amount that is frozen) and therefore there is never any very great reserve stock. With light current supplies of hogs, and with heavy domestic demand, there was a relative shortage of this particular cut, and the price naturally remained high.

The prices of cured hog meats, which form the bulk of the total, were falling during this period, so that the average price of all pork cuts fell approximately as the price of hogs. All this time the packers were suffering the heaviest losses on their pork operations that they had ever experienced. The price of pork loins finally dropped substantially in November, when the marketing of hogs increased (as it always does at that time of the year), although a member of the Federal Trade Commission publicly announced that the drop in price was due to the publicity that he had given the matter!

EUROPEAN DEMAND AND MEAT PRICES

The future course of hog and pork prices is, of course, problematical,

because it depends largely on the European demand for our products. As already explained, this is a factor that does not have to be considered in the beef situation. Undoubtedly, Europe will begin to get straightened out somewhat, and if she gets in a position to spend money for our pork products, this will be a factor in keeping the price higher than it otherwise would be. Europe's unsatisfactory financial and industrial condition is reflected in the foreign exchange situation, which has caused loss to exporters, and which has automatically reduced exports.

RETAIL AND WHOLESALE MEAT PRICES

In conclusion, a word should be said about retail prices. It is undoubtedly true that they have not fallen as much as wholesale prices. That is generally the case on a declining market; retail prices lag. But they have come down substantially, as shown by the latest reports of the Bureau of Labor Statistics. It is perhaps unfortunate that retail prices do not fluctuate with wholesale prices. The day-to-day changes in wholesale meat prices are not reflected in retail prices; but when there are any decided swings upward or downward, retail prices sooner or later become adjusted to wholesale prices.

Price Fluctuations in the Woolen Industry

By KATHARINE SNODGRASS*

Federal Reserve Board, New York City

THE two questions which are probably of most interest in connection with wool prices at present are (1) whether present high prices are justifiable and (2) whether a reduction in them is likely. The first question cannot be answered positively without statistics of cost which we do not possess. The factors which have caused present prices, however, can be traced in a general way and the reader may judge for himself whether or not, in view of these facts, present prices appear justifiable. In the same way, only a tentative answer can be given to the second question noted above, namely, the likelihood of a reduction in prices. Involved in this question is the broader one of the future movement of prices in general and the relationship of wool prices to the general price level.

WOOL PRICES

The course of prices in the wool industry in the last ten years has followed the course of prices in general except that the fluctuations, particularly during the war, have been considerably more extreme. This ten year period may be divided according to the trend of prices as follows:

1. Summer of 1911 through spring of 1914—rising and falling prices.
2. Summer of 1914 through the

summer of 1916—continuous rise in prices.

3. Fall of 1916 until the armistice—very steep rise in prices.

4. November, 1918, through March, 1919—recession in prices.

5. Spring of 1919 until spring of 1920—rise in prices.

In order to account for the present level of prices it would be necessary to trace fluctuations from the spring of 1914 to the present time. Because of its bearing on the tariff question, which is again being discussed with regard to wool, the two periods (one of rising prices and the other of falling prices) prior to the war will be briefly discussed also.

Summer of 1911 through Autumn of 1914

The wool schedule of the Payne-Aldrich law, which was effective until December, 1913, provided considerable protection to the woolen industry. The fear that less favorable legislation might be enacted was given as the cause for the low prices in 1911. Again in 1913 uncertainty as to the provisions of the Underwood bill was given as the cause for declining prices. As a matter of fact, no change was made in the schedule until 1913 when, according to the Underwood law, raw wool was allowed importation free of duty and manufacturers of wool were taxed at a rate considerably below that provided by the Payne-Aldrich law. Uncertainty regarding the tariff

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PRICES OF WOOL VERSUS ALL COMMODITIES, 1913-18

(Prices July, 1913-June, 1914=100)

Quarter	1913		1914		1915		1916		1917		1918	
	All Com-mod.	Wool	All Com-mod.	Wool	All Com-mod.	Wool	All Com-mod.	Wool	All Com-mod.	Wool	All Com-mod.	Wool
1st.....	102	108	100	98	100	108	118	129	152	173	187	257
2nd.....	100	106	97	98	100	111	123	135	177	194	190	272
3rd.....	101	104	100	100	102	114	125	141	187	222	197	283
4th.....	102	101	98	102	107	118	139	152	182	242	202	286

was undoubtedly one factor in the price situation of this period. However, in view of the fact that wool prices moved in such harmony with general prices, it seems very probable that the interaction of different parts of the price system was at least as important a factor in the situation as the tariff. The period from December, 1913, until the war began is too short to make possible any conclusions as to the effect of the removal of protection on prices. The period was one of declining prices not only in the woolen industry but also in general.

Summer of 1914 through Summer of 1916

As to the course of wool prices during the war, we have somewhat more systematic information than for the periods before or since the war. According to an index number constructed from the prices of sixty-five commodities including raw wool, yarns and cloth, the fluctuations in wool prices bore the following relationship to the fluctuations of prices in general:¹

The period dating from the outbreak of war until the summer of 1916 was one of steadily increasing activity in

the woolen industry. Several factors were influential in this connection: (1) orders of foreign governments for uniform cloth, (2) increasing domestic civilian demand as a result of increasing prosperity, (3) removal of foreign competition, and (4) importation of raw wool duty free. Foreign orders were not of large dimensions, as they were for ammunition and chemicals, but were sufficient to stimulate business and cause prices to rise. Estimated raw wool consumption in manufacture in 1915 was 56 per cent greater than in 1913, the entire surplus of raw material having been imported.

Meanwhile, prices in general did not begin to feel the influence of revival until the early fall of 1915. The year immediately following the outbreak of war was one of business uncertainty and prices in general remained almost on a level throughout the period. By the end of 1915, however, the effect of foreign demand for certain groups of commodities had stimulated general business, and prices as a whole began to rise.

The woolen industry was among the first to feel the effects of the general business revival in 1916. Prices of metals and chemicals had risen more rapidly due to the special foreign

¹ Index for all commodities is that prepared by Price Section of the War Industries Board.

demand for these commodities; but the increased prosperity resulting from this foreign business was very soon felt in the clothing industries. As a result, prices of clothing commodities were advanced considerably more rapidly than those of commodities in general. Whereas estimated wool consumption had increased 56 per cent above 1913 consumption in 1915, it increased 64 per cent in 1916 over 1913 and by the end of the year the industry was working practically up to capacity. Meanwhile the heavy demand for finished woollens caused very great competition for wools in the raw materials markets at home and abroad. Especially in the South American and South African markets, American buyers competed with foreign governments as well as with other American buyers for wools. At the same time the demand for labor from other industries and the increased cost of living necessitated wage increases. Fortunately there were no tariff duties further to enhance costs.

Autumn of 1916 until the Armistice

During the two years from September, 1916, to October, 1918, the price index number for the woolen industry doubled. During the same period all commodities advanced in price approximately 40 per cent. The main reasons for the increase in prices in the woolen industry during this period were: (1) demand of the United States government for very large quantities of woolen materials; (2) speculation on the part of wool dealers in 1917; and (3) continued civilian demand. A shortage of supplies was not felt until the spring of 1918 and did not influence prices even at that time

because the government then bought the country's entire supply of wool at prices of the preceding July. The movement of prices during this period differed as regards the raw material and the finished products. Raw wool prices made their spectacular rise between the fall of 1916 and the summer of 1917 and then settled at the high level. Wool products, on the other hand, rose more slowly but advanced consistently until the signing of the armistice. The cause of the rise in raw wool prices is to be found in the fact that the government suddenly placed orders for enormous quantities of materials; during 1917, for 25,000,000 yards of suiting, 23,000,000 yards of overcoating, 37,000,000 yards of shirting flannel, 60,000,000 pairs of socks, as well as proportionately large quantities of underclothing and blankets. Manufacturers taking government contracts bid against one another for raw materials and forced the price higher. At the same time dealers, in their efforts to control supplies, began to buy far into the future. The result would have been higher prices than prevailed if stocks had not been abnormally large. It is thus apparent that practically the entire rise in raw wool prices (amounting to 270 per cent of prices in the pre-war year) occurred before the government had begun its policy of price control. Raw wool prices stopped this spectacular advance in July, 1917, due to agreements among dealers. The government was not authorized to control prices until August of that year.

Government Control of Wool Prices

Government control of wool did not occur in earnest until the spring of

1918 although license control of both imports and exports had been instituted somewhat earlier. "Control" consisted of outright government purchase of the 1918 domestic wool clip, the requisitioning of imports which were suitable for military clothing, and the purchase of stocks held by dealers. In other words, for the remainder of that year the government owned the entire wool supply save that in the possession of manufacturers at the time control began. Control was instituted at that time because of the shortage of stocks prior to the bringing of the domestic clip to market. In making these purchases the government paid the price of the preceding July, which was only very slightly below the current market price and an exceedingly high price both as compared with pre-war prices and prices abroad.

Purpose of Government Control of Wool Prices.—It should be noted that control was not undertaken for the purpose of regulating prices of woollen clothing to civilians but in order to keep prices to the government for military supplies as reasonable as possible, and above all to insure to the government a sufficient quantity for military purposes. In so far as the latter point is concerned, control was undoubtedly successful. As regards the former point, there is little doubt that the War Department could have arbitrarily taken possession of the wool at a lower price than was actually paid. This policy, however, would have aroused the antagonism of a large section of the community, not only of wool dealers and growers but also of business men in general. As was pointed out above, unless some such

confiscatory policy had been pursued, prices could not have been less, as the greatest price advance had occurred before government control was authorized.

Monopoly buying in necessary commodities like food and clothing on the part of the government caused great hardships for the civilian public, as scarcity and high prices show. In the case of wool, although export and civilian demand had caused prices to rise originally, it was the United States government demand which was responsible for the greatest increases. Add to this the fact that, from April, 1918, until the armistice, there were no free supplies of wool for civilian use and the cause for high prices is apparent.

Price fixing in the case of yarns and cloth would probably have relieved the situation comparatively little as advances in these lines appear to have been (with the exception of yarns for a few months in 1918) merely proportionate to those in the raw materials. The speculation which occurred in the leading civilian cloth markets in the summer of 1918 was a natural outcome of the shortage of supplies.

November, 1918, to March, 1919

With the signing of the armistice the government was forced to decide whether to continue control or to relinquish it at once. Although the latter policy was followed in general, in the case of wool every effort was made to protect the industry so far as possible during the transition period. The government "cut" its prices radically in order to encourage the mills to buy; it promised the wool

growers that it would not sell wool during the summer when the domestic clip would be coming to market and, in spite of its huge holdings, allowed dealers to import raw wool freely from abroad.

In spite of these concessions, the industry was about 40 per cent idle through March, and normal conditions were not obtained until the summer months. During this period prices declined in all sections of the industry. The following table shows the course of prices of two leading grades of raw wool (one coarse and one fine) and of one grade of yarn, from October, 1918, to December, 1919, compared with the wholesale price index of the Bureau of Labor Statistics:

From a study of the table, it becomes apparent that the slight downward movement of prices in the woolen industry in the months follow-

ing the armistice was similar to the movement of prices in general. The period was one of business uncertainty marked more by industrial inactivity than by radical price cutting. This seems quite in accordance with good business judgment. There existed at that time very great buying capacity in the hands of the public. At the same time, stocks of civilian fabrics and clothing were low. There was every reason to believe that once the nervousness of business men could be dissipated, buying would commence on a large scale.

In the woolen industry the period was marked by very serious labor troubles. As prices were a factor in the situation, it seems pertinent to explain the connection. The unorganized workers in Lawrence, early in February, struck for a 48-hour week with 54 hours' pay. The strike came

WOOL PRICES AND THE GENERAL PRICE LEVEL

	Raw Wool		Worsted Yarn	Index Number
	Ohio fine unwashed delaine	Ohio 1/4 blood unwashed	1/40's 1/2 blood	Bureau of Labor Statistics
	Dollars per pound			1913 prices = 100
Oct., 1918.....	.74 ¹	.75 ¹	3.02 ¹ ₁	205
Nov.....	.74 ¹	.75 ¹	3.02 ¹ ₁	206
Dec.....	.68	.70 ¹	3.02 ¹ ₁	207
Jan., 1919 ².....	.66	.78	2.60	203
Feb.....	.69	.63	2.60	197
March.....	.69	.58	2.70	201
April.....	.70	.54	2.85	203
May.....	.70	.54	3.05	207
June.....	.73	.58	3.25	207
July.....	.78	.70	3.60	219
Aug.....	.83	.68	3.75	226
Sept.....	.83	.68	3.90	221
Oct.....	.83	.64	3.90	223
Nov.....	.85	.65	4.10	230
Dec.....	.88	.67	4.10	238

¹ Interpolated—no prices quoted.

² 1919 raw wool prices collected by Mr. Richard May.

apparently almost accidentally, following a demand on the part of the organized workers for a 48-hour week with 48 hours' pay, in which the unorganized workers were not willing to join. The strike lasted until May when the demands of the workers were granted. The main reason given by the manufacturers for refusing to grant the demands of the workers early in the strike was that the business situation—in other words, prices—was not such as to warrant wage increases. As business revived and prospects were favorable for continued advances in prices (and, incidentally, the work of more hands was needed), the demands of the workers were granted.

Spring of 1919 until Spring of 1920

The last year has been marked by advancing prices in all kinds of wool excepting coarse grades of raw wool. For these the demand has been light and as a result the government still holds millions of pounds bought during the war. The reason for the advance in prices is very much the same as for the advance in prices in general. During the war the purchasing power of large sections of the community has increased. This has led to a more

than proportionate demand for such a commodity as wool which combines the qualities of necessity and luxury. The reason that wool is abnormally high at present as compared with the general price level is in part due to this fact and in part due to the price increases of 1916 and 1917 which placed wool prices on a level much higher than the average.

PROSPECTS FOR A REDUCTION IN
PRICES

Considering the supply side statistically, we see no reason to expect a radical reduction in wool prices. At the same time, due to the fact that 1919 domestic production was slightly more than that of 1918 and imports only slightly less, there is no doubt a large stock of the raw material in the country. What the effect of this will be on prices depends largely upon how it grades as to quality. Present demand is largely for the finer grades of the material. On the demand side, so long as there is no considerable shift in business activity, there seems good reason to believe active buying will continue. However, as general prices recede, wool prices will decline also, but will probably remain on a higher level than average prices for some time to come.

Price Factors in Men's Ready-to-Wear Clothing

By SIEGMUND B. SONNEBORN

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THE prices of men's ready-to-wear clothing of today are, in the main, determined by the following factors:

- 1—Cloth
- 2—Trimmings
- 3—Labor
- 4—Taxes
- 5—Amortization
- 6—Transportation charges
- 7—Overhead and profit

The changes which have taken place in the cost of these various items since pre-war times are as follows:

CLOTH PRICES

Pre-War Period.—Prior to the war the bulk of men's ready-to-wear clothing sold in America was retailed at from \$15 to \$25. An investigation made in 1911 disclosed that about 62½ per cent of men's ready-to-wear clothing was sold at \$15 to \$20 retail; about 25 per cent of men's ready-to-wear clothing was sold at \$25 to \$35; about 10 per cent was sold below \$15; and about 2½ per cent was sold above \$35. This investigation excluded such men's clothing as is made by custom tailors or sold by agencies representing made-to-measure houses. The investigation covered only ready-to-wear clothing sold by retailers throughout the country, and represented probably 85 per cent of all the men's clothing consumed in the United States. The de-

mand being so diversified, running the gamut of so large a range of prices, permitted the utilization of all raw materials usable for the production of cloth. The finest grades of wool down to the lowest grade of wool, as well as cotton and shoddies, were freely used in the manufacture of the large variety of cloth called for.

Present Time.—At the present time all this is changed. In pre-war times, a suit of clothes retailing from \$25 upward contained all the earmarks of better class tailoring. Just as soon as the price of clothing reached beyond this figure, the popular demand insisted upon the same earmarks of fine tailoring. By the end of 1918, cloth and trimmings had reached such a price as to practically eliminate cheap tailoring from the field of ready-to-wear clothing. It is axiomatic in the clothing industry that it does not pay to put cheap tailoring into high priced materials, and, vice versa, it does not pay to put high-priced tailoring into low-grade materials. In consequence, the entire popular demand has been concentrated upon the finer grades of cloth, ignoring to a very large extent clothing made out of cheaper grades of wools, such as quarterblood wools, or out of a combination of cotton and wool. The result of this tendency has been to inordinately advance the price of fine wool, as is evidenced by the following comparison of prices:

	1915 Per Pound	1920 Per Pound
Fine Australian wool.....	\$0.60	\$2.00
One-half Territory wool.....	0.70	1.75
Ohio Fine Delaine (Boston)....	0.66	2.30
Three-eighths South American..	0.40	1.35
Ohio quarterblood (Boston)....	0.52	1.07
South American quarterblood..	0.30	0.90

It will be seen from this that quarterblood wool in Boston which cost 52 cents in January, 1915, has just little more than doubled in price in January, 1920; while Ohio fine delaine wool, which sold at 66 cents in January, 1915, brought \$2.30, or 3½ times the price, in January, 1920. This will also explain why certain fine worsted yarns, which in 1915 could be bought at \$1.15 per pound, are bringing \$5 per pound in 1920.

The rise of the finished cloth can be best exemplified by quoting the rise of price of a standard 11 oz. blue serge (D 3192, American Woolen Company), which cost in

1914.....	\$1.12	1918.....	\$2.92
1915.....	1.20	1919.....	2.62½*
1916.....	1.32	1920.....	4.50
1917.....	1.67½		

—and a 16 oz. worsted (Metcalf Brothers, Range 19), which cost in

1914.....	\$1.67½	1917.....	\$2.87
1915.....	1.85	1919.....	3.97
1916.....	2.20	1920.....	7.40

These two fabrics can well be used as standards for worsted fabrics.

As far as cassimeres are concerned, a standard 11 oz. cassimere costing \$1 in 1917 made out of the same material, cost \$3.55 in 1920 (LaPorte) and a standard 11 oz. cassimere costing \$1.25 in 1914 costs \$4 in 1920.

A standard kersey costing \$1 net in

* Temporary slump after the armistice.

1915 costs \$3.87 in 1920 (American Woolen Company. I-1826).

It is difficult to compare fancy overcoatings, but taking the same on an average, they show an increase of 3½ to 4½ times the price of 1914.

PRICES OF TRIMMINGS

The trimmings of a suit or overcoat consist of: linings, made out of either mohair, silk or cotton; of cotton or linen canvas; of haircloth; of sleeve linings, made out of cotton or silk; buttons; tape (for staying the edges); and sewings made out of cotton, linen or silk.

The following price changes have taken place in the raw materials:

	1915	1920
Cotton, per lb.....	\$0.07½	\$0.40
Raw silk, per lb.....	3.15	18.00
Spun silk, per lb.....	2.50	14.00
22" cotton-back satin sleeve lining, per yd.....	.62½	3.25
30" cotton-back satin, per yd.....	1.00	4.20
30" all-silk serge, per yd....	1.15	5.00
30" all-silk overcoat satin, per yd.....	1.80	7.50
30" all-silk Merveilleux, per yd.....	1.40	6.25
40" all-silk sleeve lining, per yd.....	1.25	6.00
40" cotton twill sleeve lining per yd.....	.07½	.35
40" sateen sleeve lining, per yd.....	.10½	.42½
40" cambric sleeve lining, per yd.....	.15	.80
30" silesia, per yd.....	.07½	.35
40" wiggin, per yd.....	.04½	.25
No 60 3-cord sewing cotton	.73½	3.12½
No. 25 Star tape.....	1.96	7.50
32-line buttons.....	.02½	2.50
50-line buttons.....	2.50	14.00
"A" sewing silk, per lb...	6.50	22.00
Linen canvas, per yd.....	.12	.70
Cotton canvas.....	.07½	.32½

This covers fairly the component

items entering into the trimming schedule of men's ready-to-wear clothing.

The schedules of two prominent manufacturers, one a manufacturer of medium price and the other a manufacturer of finer goods, rose as follows:

PRICE INCREASES ON TRIMMINGS FOR SUITS

<i>For the Higher Grade Clothing</i>	<i>For the Medium Grade Clothing</i>
1915..... \$2.03	1915..... \$1.25
1916..... 2.03	1916..... 1.25
1917..... 2.08	1917..... 1.62½
1918..... 2.55	1918..... 2.68
1919..... 4.09	1919..... 3.55
1920..... 6.00	1920..... 5.25

PRICE INCREASES ON OVERCOAT TRIMMINGS

<i>For the Higher Grade Clothing</i>	<i>For the Medium Grade Clothing</i>
1915..... \$2.50	1915..... \$1.75
1920..... 11.00	1920..... 7.75

LABOR AND WAGES IN THE CLOTHING INDUSTRY

Contract System

Prior to the war period the outstanding feature as far as labor in the clothing industry is concerned was the recognized underpayment of the workers. The whole clothing industry was under the dominance of the contract system, which kept the manufacturer from contracting with the actual workers—except with a small percentage, such as cutters and trimmers—and permitted of the vicious system of a middleman, who, being given a certain price for his product, in order to make a living, stopped at no device to exploit his employees.

This system, known as the contract system, and sometimes referred to as "the sweatshop system," flourished particularly in such cities as New York, Boston and Philadelphia, sea-

port cities where the constant flow of immigrants made the continuance of this system possible. The immigrant, unable to speak the language, anxious to go to work at any price in order to maintain himself, deluded in great measure by the fact that American money and American wages apparently were so high when translated into marks, shillings, francs, rubles or whatever his native money might have been, was easy prey for the exploitation of the unscrupulous and sometimes hard-driven contractor.

No matter how earnestly inland cities, such as Chicago or Rochester, or such markets as Baltimore, might strive to establish a factory system, the clothing industry remained, up to the war period, under the dominant influence of the contract system and wages remained inordinately low.

It is for this reason that, when immigration was cut off through the war, when demand outstripped the manufacturing facilities and a nation wide scarcity of men's clothing made itself felt during the year 1919, the industry was compelled to place itself with one fell swoop on a level with the other industries of the country.

When the Department of Labor of the United States showed that it would take something over \$2,000 a year to maintain a family with five children in decency and reasonable comfort, the clothing workers of the country were not slow in grasping the significance of this statement and insisted that some such standard of wage should be granted to the men in the industry.

The workers of the clothing industry had been, for a number of years, welded together into a very powerful union,

The Amalgamated Clothing Workers of America, ably built up by a far-sighted leader. It was this union which, in the beginning of 1919, when the managers of industry thought that the close of the war would bring about a large amount of unemployment, and an opportunity for a liquidation of labor and reduction of wages, took the lead in demanding a curtailment of the working week and insisted upon the adoption of a 44-hour week, this being, to their mind, the application of a standard 8-hour day to a 5-day working week, with a half day for Saturday.

The employers in New York attempted to resist this demand and a long-continued strike ended with the victory of the workers. A series of wage adjustments took place all over the United States during the year, ending up with the general adoption of a minimum standard of \$40 for a full-fledged tailor, with higher prices for various specialized operations. Thus the wages of labor in the clothing industry have changed from the pre-war period as follows:

WAGES IN THE CLOTHING INDUSTRY

	1915	1920
	<i>Per Week</i>	<i>Per Week</i>
Cutters.....	\$18 to \$25	\$41 to \$60.00
Trimmers.....	15 to 21	37 to 60.00
Cloth examiners...	15 to 18	35 to 42.00
Cloth spongers...	12 to 15	25 to 32.50
Pressers.....	15 to 20	45 to 75.00
Full mechanics....	15 to 21	40 to 70.00
Needleworkers....	6 to 12	25 to 40.00
Clothing examiners and bushelmen...	12 to 15	35 to 40.00

It will thus be seen that, since the pre-war period, wages in the clothing industry rose from 250 per cent to 350 per cent and that this rise has brought the level of wages paid in the

industry well up to the wage level of the best-paid industries of the country. The report of the United States Steel Company shows that the average wage of all wage earners in their plants for the year 1919 was \$6.12 per day. At the present time the wages paid in one of the leading clothing houses of the country indicate a rate of \$6.56 per day.

In the New York clothing market, the average price for tailoring a fine sack coat in 1915 was \$3.50. The same factories report an average cost of \$12.50 per sack coat for the same quality of work in 1920.

The advance of wages in Western cities was not quite as radical as in Eastern cities, owing to the fact that in pre-war times the wages paid in Western cities were considerably higher than those in Eastern cities.

While in pre-war times the average price of tailoring a coat ranged from \$1.25 to \$3.50, today the average price of tailoring a coat ranges from \$6.50 to \$12.50. The average price of tailoring a pair of pants ranged in pre-war times from 37½ cents to 75 cents; the average price today ranges from \$1.25 to \$2.50. While the average price of tailoring a vest before the war ranged from 25 cents to 75 cents, the same ranges today from \$1 to \$2.50. The average price of making an overcoat ranged from \$2 to \$5; today it ranges from \$7.50 to \$15.

Broadly speaking, the price of labor has increased from 3 to 4 times over pre-war costs, putting the industry on an economically sound basis, permitting a standard of wage which provides the workers with a good living and enables them to be more content and to be better citizens.

The charge made against a large portion of workers in the industry for their radicalism ignores entirely the fact that glaring underpayment of this industry of necessity made for discontent and called for a most radical change.

EFFECT OF INCREASED TAXES ON PRICE OF CLOTHING

The question of increased taxes and its bearing upon the price of clothing is one that affects the clothing industry in the same manner that it affects all other industries. Heretofore, taxes were negligible; today the taxes of nation, state and city are so largely increased as to become a very important consideration. In addition to this, the retailer who sells the clothing is taxed on his business, so that in his calculation he must take his taxes into account. Thus taxes provide a constantly increasing factor in the final price determination of clothing, heretofore absent.

AMORTIZATION COSTS

The present period has wrought a curious change in the clothing industry. The changed popular demand for finer grades of clothing and finer tailoring, above referred to, has forced upon fully 75 per cent of the clothing industry a profound change in their mode of manufacture and their structure of organization. As pointed out above an investigation made in 1911 showed that 72½ per cent of the men's clothing sold at retail cost below \$20. All this clothing may be described as "cheap" or "medium-priced" clothing, in which machine work predominated almost to the exclusion of hand work. With the rising price of materials,

the rising price of labor, the basic truth that it did not pay to put cheap tailoring into high-priced materials, about two-thirds of the manufacturers in the United States were forced to make improvements in methods of tailoring. Their staffs, accustomed to cheaper grades, had either to be changed or had to apply themselves to the production of more highly tailored garments. This necessitated the establishment of a great many "inside shops," because contractors were unwilling to undergo the hardships and losses incident to such change.

As one old and tried manufacturer stated, "In industry, change, in order to be effected without tremendous cost of money and nervous energy, must come over a working force like old age—gradually." Popular demand forced the clothing industry to go upon a higher basis of manufacture after the close of the war so suddenly as to cause violent adjustment in every phase of the business.

During the year of 1919, the clothing industry was kept busy investing in plant and machinery. Curtailed hours, curtailed production on account of quality, curtailed production on account of new methods of tailoring, forced upon the industry a tremendous investment in plant and machinery.

Heretofore, 50 per cent to 60 per cent (if not more) of the clothing was made under the contract system, the price agreed upon between the manufacturer and the contractor providing a very small pittance for amortization or management. Today, with the large investment of the clothiers in plants and machinery, amortization costs must be considered as never heretofore.

But from this change a very important indirect benefit has resulted. The very necessities of the situation have forced the employers in an industry heretofore seasonal to arrange their operations not only for intense but for steady production. Machinery and plant must be used continuously to be profitable investments and organizations once built up cannot be enlarged or contracted at will as under the contract system. An important economic step has been taken forward—the burden of steady employment in the industry has been emphasized and impressed upon the employer and the manager.

EFFECT OF TRANSPORTATION CHARGES ON PRICE OF CLOTHING

Transportation Charges.—The uncertainty of delivery has brought it about that a large amount of cloth as well as clothing today has to be shipped by express, both from mill to clothier and from clothier to retailer. Heretofore, the item of transportation hardly figured in the cost of clothing, but it may be fairly stated that where formerly probably 90 per cent of cloth and clothing was shipped by freight at a minimum of cost, today a very large percentage of both cloth from mill to clothier and clothing from clothier to retailer is shipped by express.

In addition to this, the greatly increased rates for both freight and express are piling a new and ever increasing item of expense upon the garment.

OVERHEAD AND PROFIT

That overhead and profit are figured on a smaller basis in the clothing industry today than before the war is borne out by the fact that, while cloth has advanced about 400 per cent, trimmings from 400 per cent to 500 per cent, labor from 250 per cent to 350 per cent, men's ready-to-wear clothing, both wholesale and retail, has only advanced 250 per cent to 300 per cent. This is exemplified by the fact that a well known brand of advertised clothing, that with tailoring corresponding to its present day standard of workmanship would have brought in pre-war period \$25 per suit, is now retailing at \$45 to \$70.

PRICES REASONABLE

Suits retailing in the pre-war period from \$35 to \$50 are now retailed freely at \$75 to \$100. Considering the fact that all men's clothing throughout the United States is improved in quality, in workmanship, in appearance, in durability, considering the fact that the new development in the industry does away with the old sweatshop system and makes for steady employment of the workers, eliminating the extremes of unemployment, which have been such a serious menace to our national prosperity in the past, considering further the advantage accruing to the nation from a body of workers comprising a quarter of a million men and women, now upon a wage basis of decency and fair comfort, the present cost of men's ready-to-wear clothing may well be considered as entirely reasonable.

The Housing Shortage and the Supply of Building Materials

By HOMER HOYT

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THE United States is over a year behind schedule in her building operations.* It would be necessary to double the output of building materials and new homes in a single year in order to make good this building deficit. The physical supply of basic raw materials is amply sufficient for the most ambitious housing program, but the high cost of construction in proportion to the returns is checking a building boom that would otherwise quickly fill the vacuum! These are the main head lines of the building situation in the United States in the year 1920.

THE HOUSING SHORTAGE

Decline in Building

The housing shortage is the natural result of the decline in building that began with our entry into the war in 1917 and that continued until the latter part of 1919. The government war-building program of \$1,500,000,000 did partially offset the decline in private building, but the construction of cantonments and other structures for military purposes contributed little to the maintenance of the peace establishment, and hence may be ignored in this discussion. We are confronted today with a housing shortage that is reflected in daily appeals for more homes, high rents, over-crowding, plans to build portable houses, and official conferences to stimulate building. Although the lack of dwellings is becom-

ing an acute want, this building deficit cannot be measured in exact terms. The number of new houses needed cannot be computed by taking a census of the homeless, because the "shortage" has not been great enough to force many American householders to sleep in the parks; it has merely crowded the nation into closer quarters—into fewer rooms and into dark tenements that were normally vacant.

The best light on the extent of the building vacuum can be obtained by computing to what extent the building in the last three years has fallen short of the building in three normal building years. Assuming that our population and building needs have increased during the last three years at a normal rate, the housing shortage will then be shown by the amount by which the actual building operations of 1917, 1918 and 1919 have failed to keep pace with this normal demand. Even this method of computing the housing shortage will bring us to only approximate conclusions.

The final estimate of the housing shortage must be compounded from two other estimates, in each of which lurk the chance of error. First, in the absence of any official census of the total number of buildings in the United States and the total amount of annual building in the nation, we must rely upon the official statistics of the *United States Geological Survey* which cover

building operations in the leading cities only. These statistics, while excellent for a comparative study of building in cities, might not show the trend of new construction in the country districts. The writer believes, however, that the statistics of the *United States Geological Survey* may be taken as representative of building in the entire nation—city as well as country—because the main variations in the amount of building during the war were caused by congestion of war work in certain sections of the country and not to any difference between urban and rural districts. Thus the building shortage was acute along the Atlantic seaboard in both city and country districts while building activities were almost normal in some of the city and country districts of the south and west. Since the building statistics of the *United States Geological Survey* include cities in all sections of the nation, it is believed that they represent a fair average of building operations. These statistics do not include construction for military purposes, for which no permit was required, but such building should properly be excluded from a discussion of normal building.

Secondly, since the building statistics of the *United States Geological Survey* do not show the actual number of houses, but only the value of the building permits, allowance must be made for the increased value of permits that was due entirely to the change in the price level since 1914. In other words, comparative statistics for the last four or five years in terms of dollars are misleading, because it takes more dollars in 1919 than it did in 1913 to represent the same physical volume of building. Yet physical volume of

building is what we must determine in dealing with a housing shortage, for a house that costs \$5,000 today will not shelter as many as two houses built of the same materials four years ago at a cost of \$2,500 each.

INCREASED BUILDING COSTS

How shall we weight the value of permits to allow for increased building costs? The average prices of twenty-nine leading building materials, computed by the Price Section of the War Industries Board,¹ had advanced 37 per cent over their pre-war average (fiscal year ending June 30, 1914) by the end of 1916, 69 per cent by the end of 1917, and 92 per cent by the end of 1918. The prices of building materials of the Bureau of Labor show that the advance had reached 136 per cent by November, 1919.

The cost of building probably has not advanced as much as the prices of building materials, however, because the wages of building labor did not respond as quickly as other wages to the upward price movement. The Division of Public Works of the United States Department of Labor has made an estimate of the increased cost of building since 1914, which includes the average costs of all types of buildings. These figures will be used to discount the value figures of the *United States Geological Survey*.

Taking the value of building permits for the year 1913 as equal to normal for the country or par of 100 and also putting the building costs of that year as equal to 100, we can thus compute the decline in building that has occurred since 1917:

¹ Prices of Building Materials, 1919. Bulletin No. 6.

	Value of Permits ^a (in 143 to 151 Cities)	Weight for Cost of Building ^a	Estimated Building Operations for the en- tire United States	Deficit in Build- ing for the en- tire United States
			Per Cent Normal	Per Cent Normal
1913	\$859,657,250	100 ^b	100	0
1914	785,525,746	100	..	..
1915	799,735,860	100	..	..
1916	1,024,211,675	117	..	..
1917	687,415,605	139	60	40
1918	430,014,365	159	31	69
1919	1,281,000,000 ^d	200 ^b	75	25
Accumulated deficit			134	

^a United States Geological Survey.

^b United States Department of Labor, Division of Public Works: *Economics of Construction Industry*, p. 87.

^c United States Chamber of Commerce.

^d Estimated.

Thus the housing shortage is equal to one and a third years of normal building. While this estimate is only an approximation, it is a minimum estimate of the building shortage. If prices of building materials, as computed by the Price Section of the War Industries Board, were used to indicate the rise in the cost of building, the accumulated deficit would be 167 per cent or one and two-thirds years of normal building. The average shortage of buildings for the country as a whole is probably equivalent to slightly more than the amount erected in a normal year, because, as we shall see later, the production of leading building materials is also about a year in arrears.

Other estimates of the housing shortage have been made in terms of the number of houses. The Forest Service estimates that we lack 450,000 houses. Other authorities place it as

high as 800,000 or 1,000,000. In view of the wide variation between the size and cost of small frame cottages, rooms in family hotels, apartments, tenements, etc., it is hard to define any standard "house" as a unit of measure. We shall therefore content ourselves with the estimate of the housing shortage in the terms already given, namely, that we lack slightly more than the number of buildings that were finished in a normal year.

SUPPLY OF BUILDING MATERIALS

What is the supply of building materials that is available to meet the deficit caused by the lack of over a year's building? If it were necessary to take an exhaustive inventory of all the hundreds of kinds of raw and partly finished building materials, such as cement blocks, door knobs, metal lath, in-a-door beds, plasterboard, flooring, finished doors, window sashes, etc., we would have tables of statistics sufficient to fill this entire volume. But such an elaborate stock-taking is not required because it would prove little even if prepared. Building materials are produced as they are needed; the supply is forthcoming when there is evidence of a demand. Building materials are not grown like annual crops and stacked up in warehouses to be sold to the highest bidder. Consequently, the quantity of finished building materials, now on the shelves of dealers, has little bearing on the quantity that could be produced if a building boom stimulated production.

We need only look to the amount of standing timber, the quantity of cement rock, the volume of common clay, the deposits of limestone and iron ore. Mother Earth is the primary

source of our building materials. If her cupboard is well-stocked, it will take only time, labor, and plant capacity to bring forth all the buildings we need. It can safely be said that the supply of these basic materials is sufficient for all housing requirements that will arise now and for many years to come. There is an almost unlimited supply of clay for the making of common brick, cement rock is almost equally abundant, the coal for burning clay into brick and cement rock into cement will last a century at least, the iron ore for structural steel, metal lath, hardware, etc., will not be exhausted within the lifetime of the unborn children of our unborn children; lumber is beginning to show signs of exhaustion, but we need not worry about the lack of lumber for any building needs that will come within the next ten years. The supply of basic raw materials is thus sufficient to double, if not to triple, the output of buildings in a single year.

What labor and plant capacity is available to work up this added supply of raw materials? It has been estimated that there is an excess plant capacity of 50 per cent in the lumber industry; there is a like excess capacity in the case of cement, brick and stone, while the steel mills could easily produce more structural steel by the curtailment of other steel products. If the building demand is important enough to attract labor from other industries, labor can be supplied in sufficient amounts for all the unskilled work. Even enough skilled bricklayers, carpenters, etc., could probably be found if the abnormally large building operations were distributed evenly over the year and

not piled up in one peak load. Thus demand for building would start the ball a-rolling that would pile up sufficient building materials by the end of this year to enable us to do two years' building in the one year of 1921.

Cost of Building Materials

But demand for building—aye, there's the rub. What contractors will put up buildings at double the 1914 costs, when rents are not allowed to advance to cover this increased cost of building? Who will erect a house which is only a little newer and a little better than one costing just half as much? The majority of people still have hopes that prices will come down and as long as they feel that way they are loathe to invest in permanent structures at high cost that may later be matched by equally good structures at much lower costs when prices come down. Thus the high cost of building materials is the cause of the contraction of building activities. Since that high cost is primarily due to the high wages paid to labor in the building industries, such high cost will not fall much with increased production. The raw materials exist in abundance, but it takes labor to fabricate them into buildings, and this labor is very expensive. Herein lies the kernel of the problem.

PRODUCTION OF LEADING BUILDING MATERIALS

The extent to which the production of building materials and likewise the demand for building materials has fallen off during the last three years may be observed by a study of three leading building materials: lumber, cement, and common brick. By taking

the physical production of each of these basic materials during the last three years and comparing the production during these years with that of a normal year, we can ascertain the amount of the deficit in the case of each one.

Lumber

The normal annual lumber production of the United States is about 40 billion board feet. Allowances must be made, however, for the fact that the lumber consumption in this country is declining and also for the excess of exports over imports which amounted to two billion feet a year before the war. The normal consumption of lumber in this country would therefore not exceed 38 billion feet. Since there has been practically no surplus of lumber exports over imports during the last three years, the entire production was consumed in this country during those years. Taking 38 billion board feet as the normal production of lumber, the lumber deficit is shown by the following table:

Year	Lumber Production M Board Ft. ^a	Deficit M Board Ft.
1913	38,387,000	
1914	37,346,023	
1915	37,001,656	
1916	39,807,251	
1917	35,831,239	2,200,000
1918	32,700,000	5,300,000
1919	33,500,000 ⁷	4,500,000

Accumulated deficit	12,000,000
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To this deficit of 12 billion board feet must be added the six billion board feet that were used for cantonments, airplane stock, etc., which contributed practically nothing to normal building. This would make a total lumber

deficit of 18 billion feet or about one-half of the annual lumber cut. Since it is estimated that only about one-half of the lumber cut is used directly for houses and building, this lumber deficit is equal to the amount of lumber that goes into building in a single year. Of course it cannot be assumed that the lumber deficit is building lumber exclusively, for during the war there was a falling off in the consumption of lumber for making furniture, box cars, and many other articles besides houses. Nevertheless, a lumber production of 60 billion feet in a single year would be required to make good the deficit of wooden houses and other wooden articles. The supply of standing timber and plant capacity in the lumber industry is easily adequate for this task, but high lumber prices will prevent such a heavy demand from accruing in one year.

Cement

In 1913 cement production exceeded all previous records with over 92,000,000 barrels, but this mark was again surpassed in 1917 when the figures reached almost 93,000,000 barrels. Since cement production has been continually increasing in normal years, it is fair to take 92,000,000 as a basis for computing the deficit. The cement shortage is then shown by the following table:

Year	Production (Barrels)	Deficit (Barrels)
1913	92,097,131	
1914	88,230,170	
1915	85,914,907	
1916	91,521,198	
1917	92,814,202	
1918	71,081,663	21,000,000
1919	80,287,000	12,000,000

Accumulated deficit	33,000,000
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^a United States Forest Service.

⁷ Estimated.

To this deficit of 33,000,000 barrels must be added the 11,000,000 barrels used for military purposes, making a total cement deficit of 44,000,000 barrels. To wipe out this accumulated shortage in a single year would require a cement production of 135,000,000 barrels. While the raw materials and plant capacity are capable of furnishing this amount, the demand for that amount of cement is not likely to develop in a single year. An increase in cement production at a rate more rapid than other building materials is to be expected, however, in view of the relative cheapness of cement.

Common Brick

Common brick production and consumption has been declining so that although production reached eight billion brick in 1913, the normal average is probably not over seven billion brick. Allowing seven billion brick as the normal production, we find the following common brick deficit:

Year	Production ^a M Brick	Deficit M Brick
1913	8,088,790	
1914	7,146,571	
1915	6,851,099	
1916	7,394,202	
1917	5,864,909	1,100,000
1918	3,556,519	3,400,000
1919	4,500,000 ^b	2,500,000

Accumulated deficit	7,000,000
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Since very little common brick was used for military purposes, the net deficit remains at about seven billion brick or an amount equivalent to one year's production. To catch up with present and deferred building needs a common brick production of 14 billion brick, would be required but such

^a *United States Geological Survey.*

^b Estimated.

a production is not likely to be demanded in a single year.

Thus, the shortage in the production of three leading building materials is about equal to the amount of each of these materials consumed in building in a normal year. Only part of the cement and lumber production being used for building, a 50 per cent increase in the annual production of these materials would fill the building vacuum. Since all of the common brick is consumed in building, the deficit is equal to 100 per cent of one year's production. The curtailment of brick buildings during the war was also more marked than in the case of lumber and cement structures; so there is a greater real deficit in the case of common brick.

CONCLUSION

The so-called building deficit might conceivably never be entirely met. With the cost of building materials today 135 per cent higher than the pre-war level, space will be economized to a greater extent than when buildings were cheaper. In the pre-war days there were always the unoccupied "marginal" houses, the dark apartments that were seldom if ever rented, the extra bed-room for guests, the inside hotel rooms for which people seldom registered, the cheap lodging houses that were never filled to capacity. The scarcity of buildings has forced families to accept the dark apartments they formerly passed by with disdain; lack of hotel accommodations compels the late-comer to sleep in the parlor or in a boiler room; some families give up their "extra" rooms to roomers, while other families dispose of their homes and confine them-

selves in small furnished apartments. The higher cost of space will cause the nation to crowd into closer quarters, because it cannot afford to spread out and maintain as many vacant rooms as formerly. We will neither have as much space or as many new buildings if the costs of building continue to rise. Old buildings that would be torn down when new buildings were cheap will be patched and preserved for further service when a new building is a luxury.

Factory building will proceed regardless of construction costs. The expense of the factory building is only a small fraction of the cost of the finished product and, when expanding sales require a larger factory, buildings must be erected or the profit on the increased sales will be lost. The opportunity to crowd factories into smaller buildings and to economize space is not as great as in the case of private dwellings, for factory space has already been economized as much as possible to save heat, light, insurance, ground rent and interest. Neverthe-

less, the higher cost of building may put a further premium on night shifts.

In the course of time, however, building will probably resume normal proportions whether prices remain where they are or whether prices fall. A financial depression and a fall in the prices of building materials will, of course, stimulate a rush of new building. On the other hand, if prices remain where they are, the depreciation of the dollar will gradually become a commonly accepted fact. People will cease to object to paying twice as much rent when new buildings are erected at twice the cost of old buildings, and when they receive twice as large an income. When the prices of everything have advanced to a new level and the adjustment is complete, a dollar spent for building will go as far as a dollar spent for anything else. Then the nation will expand into its more commodious quarters again. Under any view of the situation, a great number of new buildings looms on the horizon.

Housing and Building Conditions

By ERNEST T. TRIGG

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IT has been estimated that in the United States we are short, approximately, a million dwellings. I use the term "dwellings" to designate places of residence for families, including, thereby, apartments and other group-housing as well as houses. It is difficult to determine to a nicety what our national shortage is at the present time. An accurate survey would probably show it to be materially greater than the above approximation. There are several reasons for the shortage. During 1917-18 while we were engaged in the World War all of the available man power at home was required for ship building, munitions making, food production and other war necessities. During this period, there was practically no civilian construction, buildings could only be erected upon permits issued by the government and no permits were issued except for necessary construction contributing directly to the war. Another reason for the shortage, or to put it another way, for the demand for dwellings which now exists is the fact that due to high wages workmen are demanding better types of homes, which demand is equivalent to providing for that much addition to our population. Then, too, we have lost a full year of opportunity since the signing of the armistice, for during 1919 housing construction was woefully behind even normal requirements.

The first six months of 1919 saw

practically no progress in this direction, due to uncertainty as to price levels and the rather strong feeling on the part of many that prices would immediately decline. In the summer of 1919 the public, generally, came to realize that high prices were going to last for some time at least and in the fall some construction work went forward, much of it at higher prices than existed in the spring. Here are some figures to show the condition: The average number of dwellings constructed annually for the twenty-seven years from 1890 to 1917 was 352,000. During the last seven years of that period, 1910 to 1917, the annual average was 430,000. In 1918 the total was 20,000; in 1919, 71,000. It has been stated on reliable authority that there are, at the present time, 121 families for every 100 homes in the country. If the average annual requirement for the next five years remained only the same as the average production from 1910 to 1917, that is, 430,000 homes, and figuring on taking up only the shortage of 1918-19, we must construct practically three million new homes during that period only to find ourselves at the end of five years in the same condition we were in at the end of 1917, when there were 115 families to 100 homes. I do not hesitate to say that under present conditions and in view of the large amount of construction work of other kinds, such as factories, warehouses, public

buildings, institutions, roads, etc., required we cannot possibly produce anything like such an amount and unless something substantial is done promptly to help the situation we shall find a very bad condition made much worse. There are three important problems which should be met and solved without delay:

INCREASED HOUSING CONSTRUCTION

Important Problems Involved

First, Financing.—The amount of home building with finances entirely provided by the owner is relatively unimportant. Money must be provided for home building which can be retired gradually over a term of years. Before the war, funds could ordinarily be obtained from the usual financial sources for building purposes where the ground was clear and sometimes, where the risk warranted, practically all of the funds, including the ground value, could be borrowed. Today, projectors of building operations must have the ground clear and in many cases they must provide 25 per cent to 33½ per cent of the cost of construction before they can borrow the balance needed, while in other cases the financing is limited to 50–60% of the 1914 valuation. This condition is due to the present high cost and the feeling on the part of financial interests accustomed to providing funds for such purposes, that before the debt is liquidated values will recede to a point where there will not be sufficient equity in the property to protect the loan. As one means of relieving this situation it has been suggested that Congress might well make the income on real estate mortgages up to a total of \$45,000 (mortgage value) exempt from federal taxes.

This would make such mortgages peculiarly attractive to small investors and would undoubtedly release large sums of money in the aggregate, now being carried in savings banks or in other relatively inactive ways. It has been argued that such legislation would deprive the government of a substantial amount in annual taxes. The answer is that it is quite likely that it would not cost the government anything but would, on the contrary, materially increase its revenue in time, because the money released by such an act would immediately go into permanent improvements which would, in the long run, provide their full share of taxation. But over and above the question of revenue is the importance of providing means whereby our people may be housed. Bills have been introduced in both houses of Congress to accomplish the tax exemption on real estate mortgages in a limited amount. It is to be hoped that they will be enacted into law.

Second, Standardization.—Already, much has been accomplished in the construction industry in this direction. The progress so far, however, has been more along engineering lines in big construction than in home building. The building of homes can be speeded up materially by the standardization of various factory products made to definite pre-determined sizes ready to be fitted into place on the job. Too much of the workman's time is employed in fitting parts which might and should come to the work already for assembling. There is no thought of standardizing architecture. It would be "penny wise and pound foolish" to advocate similarity in construction style. This would remove the artistic

and pleasing from our communities and eliminate individuality. But the general design need not be influenced by the many construction materials which could be of sizes known to the architect when plans are being drawn. Through the National Federation of Construction Industries which is now at work on this task, it is hoped that definite progress may soon be made in this direction.

Third, Labor.—This is by far the most important factor involved, in its relation to production. I shall refer to it but briefly. It is an all important subject in industry today. There is a shortage in our basic industries at the present time of approximately four million men. In normal times immigration adds annually 400,000 to 500,000 workers to our payrolls; during the war this was all cut off. In 1919 the emigration exceeded immigration. It is hoped that Congress, realizing the depletion in labor's ranks, will soon enact that kind of intelligent legislation which will encourage the right kind of law-abiding workers to come to our shores. Notwithstanding the shortage of actual workers, industry is confronted with a reduction of from 30 per cent to 40 per cent in the daily production of the workers we have as compared to pre-war, man-hour production. This is due to a general letting down on the part of labor that is retarding the output of supplies of all kinds. As an illustration, bricklayers who formerly laid from 1,500 to 1,600 bricks per day, now lay only 700 to 800. In addition to the reduction in daily production, demands by workers are now being made for five-day weeks as well as for less hours per day. The great shortage in housing

can only become more serious from year to year in the face of reduced production. I do not believe that more than a meager percentage of our workers are influenced in their attitude by radical or revolutionary ideas. I do believe that the right sort of education to that big majority, who are today thoughtlessly retarding production, will cause them to realize their responsibility in the situation and have the effect of getting from them all of the production and the work possible up to the point where it is not injurious to their well-being. The workmen of this country owe it to themselves and to the nation to produce to the greatest extent reasonably possible. The present high prices are a result of a demand far in excess of the supply. The only way this condition can be changed is to increase the supply; that means more production. Attempts made under federal administration direction to standardize prices failed. Any effort to regulate or standardize prices in a national way in peace times will create an artificial condition and must fail. Regulating prices by industrial groups is illegal and cannot be done. No substitute has so far been found for the law of supply and demand which will effectively and permanently regulate prices for the law of supply and demand. It is the natural common sense basis on which to operate. More production on the part of every one will spell a greater supply and make it possible for the demand to be more adequately met. Summed up, more encouragement to the construction industry in a financial way, elimination of unnecessary work on the job through standardization, and more production by each work-

man will go a long way toward helping solve our national housing problem and enable the construction industry to acquit itself creditably in this its hour of great responsibility to the nation's welfare.

The following quotation from Ruskin contains a sentiment peculiarly fitting at this time:

FOREVER

Therefore when we build, let us think that we build forever. Let it not be for present delight, nor for present use alone. Let it be such work as our descendants will thank us for, and let us think, as we lay stone on stone, that a time is to come when those stones will be held sacred because our hands have touched them, and that men will say as they look upon the labor, and wrought substance of them, 'See this our Fathers did for us.'

Lumber Prices

By R. C. BRYANT

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PRICE CYCLES

THE studies made of lumber prices of past decades have not been sufficiently exhaustive to enable one to trace the exact history of the movement.¹ However, the studies that have been made are very suggestive, since they indicate that relative lumber prices move in cycles. Two of these cycles have been noted in the past, namely, between 1860 and 1880, and again from 1880 to 1916. Present evidence points to the beginning of a third similar cycle.

These cycles are characterized, during their early years, by an increasing divergence in the relative lumber price level from that of the "all commodities" group, followed during the later years of the period by a decline in the rate of increase of the lumber price line, the latter gradually approaching the "all commodities" group level at the end of the cycle.

SHIFTING CENTERS OF LUMBER PRODUCTION

The beginning of the divergence in the rate of increase between the two groups, in each cycle, is nearly coincident with the shifting of the center of lumber production from one section of the country to a more distant one.

Production in Northeastern States.—

¹ Some difficulties present themselves in the study of early lumber prices because of the fragmentary character of the price records and because of the many changes in grade designations which took place previous to the past two decades.

The relatively rapid increase in lumber prices as compared to the "all commodity" group came at a time when lumbering was losing its local character and becoming a national industry. The centers of production of the Northeastern States failed to meet the new demands made upon them and the lumber industry, in the course of its expansion, began to move to more distant interior points in New England, New York, Pennsylvania and the pineries of the Lake States. With this shift in the producing centers there came also a westward movement of the center of population.

Although there was an abundance of raw material in the country, the supply near the markets was less abundant. The length of haul to market having increased, transportation costs became a more important factor in the delivered price of lumber and it was early reflected in a rather rapid rise in the relative price of lumber. This latter tendency was not so evident in the "all commodity" group since there was not a similar shift in the source of raw materials required in production.

Production in the Lake States.—From 1870 to 1880 there was a marked increase in the lumber producing capacity of the country, especially in the Lake States, and since the center of population was gradually moving westward there was a reduced haul to market for the lumber used by a greater per cent of the consuming public. On the other hand, the move-

ment of the center of population westward meant a shift away from the regions where many commodities, other than lumber, were manufactured, hence there was an increasing length of haul and greater transportation costs. The latter condition caused an increase in the delivered cost of many commodities and near the close of the cycle brought the relative values of the groups closer to each other than they had been at any time since the Civil War.

Production in the South and West.—Lumber prices about 1880 began to manifest the same tendencies that were evident during the early part of the first cycle. In the meantime the Lake States had become the center of lumber production and the center of population had shifted to Indiana, thus bringing about a new readjustment in the distribution of lumber. Although lumber manufacture was still at its height in the white pine region, there were indications that a relative lumber shortage was not far distant and operators were beginning to make investments in the West and also in the Southern pineries. The divergence in the relative prices of lumber and the "all commodity" group appears to have continued up to about 1907, following which time the rate of divergence decreased and more closely followed the general trend during the period from 1873 to 1880.

There is some evidence that we are entering upon a third cycle in the lumber price movement. The Bureau of Labor Statistics for the year 1919 shows that lumber and building materials advanced during the year 66.5 per cent; cloths and clothing 49.5 per cent; house-furnishing goods 48.5

per cent; food prices as a whole 22 per cent; fuel and lighting 8 per cent, and metal prices 3 per cent. Whether this heavy advance in building materials, including lumber, is the forerunner of a new cycle in the lumber price movement or merely an incident due to the disturbed building conditions as a result of the war cannot, as yet, be stated.

Recent Changes in Production Centers.—We are now passing through a change in the lumber industry similar to that which occurred shortly after the Civil War and after 1880, namely, the shifting of the center of maximum production from one region, the Southern pineries, to the forests of other regions, the Inland Empire and the far West. It is reasonable to suppose that the transplanting of the center of maximum production from the South to the West, 2,000 miles distant, without a similar transfer of the center of population, will again bring about a greater relative increase in the value of the "lumber" group as compared with the "all commodity" group.

CHARACTERISTICS OF PRICE MOVEMENT

Prices Prior to 1913

The lumber price movement previous to 1913 displayed fluctuating tendencies, short periods of high prices being followed by comparatively long periods of low prices during which the returns to the industry were either low or negligible. The changes were more pronounced in general utility woods, such as Southern yellow pine and Douglas fir, and less apparent in specialty woods such as cypress, redwood and Eastern white pine.

One of the chief causes of the fluctua-

tion of lumber prices was the rapid and apparently unwarranted expansion of the lumber industry, which led to over capitalization and excess mill capacity, which in turn resulted in over production and exceedingly keen competition not only between the various producing regions but also between manufacturers within a given region.

Lumber prices began to rise rapidly about 1897, the demand for lumber being stimulated by the rapid industrial development of the country. An era of marked expansion of the lumber industry followed and buying of stumpage became so brisk that the price of raw material early reached a value which absorbed the greater part of the profit resulting from the higher prices of lumber.

The era of high prices for lumber culminated during the panic of 1907, and the rapid drop in value following this period led to many financial failures and to general demoralization in the industry. The demand for stumpage fell off and the chief means by which the majority of stumpage holders could secure sufficient funds to meet current expenses was to manufacture the stumpage into lumber and to sell it in the open market in competition with the products of other operators equally hard pressed.

The period following 1907, especially from 1908 to 1910, was marked by many failures in the lumber industry especially in the Northwest. By 1911 the lumber business had become more profitable. In 1912 there was a marked improvement in lumber demand and in lumber prices fostered by improved business conditions, an increase in building, increased railroad earnings and favorable crops.

Prices, 1913-1920

1913.—Although the trade at the opening of the year 1913 looked favorable, prices began to decline in April and competition among manufacturers was very keen. During the last four months of the year lumber prices were unsatisfactory, those for general building woods, such as Southern yellow pine, approached the price level prevailing in 1908 following the panic.

1914.—Values continued to fall during 1914 because of the subnormal building activities and the relatively meagre purchases made by the railroads. The opening of the European war in August soon reduced lumber exports to a minimum and brought about a hesitant attitude in buyers in this country, who limited their purchases to immediate needs only. In spite of curtailed production stocks of lumber accumulated at the mills throughout the year, since curtailment did not keep pace with the decreased demand. It was not until the middle of the following year that the stocks on hand began to diminish to an appreciable extent.

1915.—During the first three quarters of 1915, lumber prices remained at approximately the same level as those current during the latter part of 1914. Toward the close of the year the price level took an upward turn due to the large amount of industrial construction, the revival of railroad purchases of lumber on a rather large scale, purchases of retail yard, planing mill and wood-using factories made in anticipation of a heavy spring trade, and to a car shortage which created a lumber scarcity in some sections. Production was greatly stimulated by

this revival in demand, since operators were desirous of recovering their losses of the previous two years.

1916.—Stocks of lumber carried over into 1916 were not abnormal but there was a tendency on the part of buyers to withhold purchases in the hope of a return to the low quotations of 1915. This attitude on the part of the buyers led to price concessions, especially on general building woods, which was reflected in a price decline for many grades during the first two quarters of the year. This took place in spite of an acute car shortage which started during February and which later in the year proved to be one of the greatest transportation handicaps that the industry had experienced. Normally, a car shortage tends to raise prices by bringing about a relative scarcity of lumber in the large consuming regions. However, production so far exceeded the amount of lumber moved, that stocks rapidly accumulated and, in order to finance the operations, sales were made at a lower price than would ordinarily be justified. An increased demand for lumber and a continuance of the transportation handicap led to a rise in price late in the year.

1917.—In the second quarter of 1917 a marked advance came. This advance was due chiefly to the heavy demands of the United States government for military purposes, to the industrial activity in manufacturing centers due also to the war, and to the great prosperity which had come to the agricultural sections through the high prices which they received for their crops.

The chief feature of the market during the last nine months of the year were the government purchases

since the general building program of the country was subordinated to military requirements, and labor and money for speculative building could not be secured easily.

Prices during the last half of the year were held to a comparatively uniform advance by a voluntary price agreement entered into in June, between the Southern pine operators and the Council of National Defense, for such lumber as the United States government required for military cantonment purposes. This agreement did much to steady the price of general building woods, since Southern pine represents such a large per cent of the lumber output of the country. The importance of this wood in the military program during 1917 and 1918 is shown by the fact that 3,500,000,000 board feet of Southern pine lumber was absorbed for government purposes during a period of eighteen months.

The characteristic features of the 1917 lumber trade were the abnormal government demand, greatly reduced commercial business not related to the military program, transportation handicaps for the movement of commercial sales, and a voluntary price agreement between the producers and the various governmental purchasing agencies.

1918.—Commercial prices advanced rapidly during the early months of 1918 for such consignments as could be moved. This was due chiefly to a desire on the part of buyers to stock up previous to the 25 per cent advance in freight rates which was to go into effect on June 25, to the rapidly rising costs of production which pointed towards higher prices later in the year, and to the fear that with reduced production and increasing government

demands, the commercial buyers, in order to make certain even of their minimum requirements at a satisfactory price, must secure their stocks at an early date.

Governmental Price Fixing

The rapidly widening gap between governmental and commercial prices for lumber soon forced the conclusion that it would be impossible for the government to continue to purchase lumber in reasonable quantities unless some measures were adopted to put both governmental and commercial quotations on a parity.

The price fixing committee of the War Industries Board therefore fixed a maximum price at which certain kinds of lumber could be sold both to public and commercial agencies. The prices were first fixed for Southern yellow pine and Douglas fir in March, followed by Eastern spruce in April, and Pennsylvania hemlock in August. Special agreements were made also with regard to some other woods. No attempt was made to fix the price of hardwoods, although informal agreements were made with producers regarding certain items such as mahogany lumber and birch logs which were in demand for special military purposes. All of the price restrictions were removed by the end of the year.

Conservation measures were enforced in many wood-using industries, during the latter part of the year because of the necessity of diverting their labor, supplies and transportation to direct or indirect military purposes. These measures greatly curtailed the use of lumber for all but essential purposes. The result was a heavy decline in lumber production and a

consequent decrease in stocks on hand at the mills, since the movement of lumber was in excess of production.

During the last quarter of 1918 the lumber price index showed a decline of 3 points.² Southern yellow pine, however, rose 1 point and Eastern hemlock and Eastern spruce remained stationary.

This check in the rise of prices was due, in the case of hardwoods, to the abrupt cessation of lumber purchases by the government and to the inability of the commercial market to immediately absorb its normal amount of material. The industries using hardwoods, in many cases, specialized on war requirements and had large quantities of material on hand which had to be utilized before making new purchases. The uncertainty as to the trend of business during the next few months also caused a reduced demand.

The stock of general purpose lumber in the hands of dealers in this country was at a very low point, however, and the immediate requirements for lumber for repairs was sufficient to hold the market rather firm for construction woods. The Douglas fir decline may be attributed to the great uncertainty which existed in the minds of western operators as to the course future events would take. The movement of their product was hampered also by transportation conditions.

Prices in 1919

The first six months of 1919 was a period of more or less uncertainty in the lumber market. The lumber trade was unduly disturbed over what dis-

²Based upon the lumber price index in *Prices of Lumber*, by R. C. Bryant, War Industries Board Price Bulletin No. 43, Washington, 1919.

position was to be made of the several hundred million feet of lumber which the government had on hand at the signing of the armistice. Producers also were greatly concerned over the possible trend of business in this country and abroad. Many diverse opinions existed as to the volume of lumber that would be absorbed, the prices which it would bring and the probable trend of costs. Labor conditions in the industry were unsettled, a marked labor shortage existing, with constant pressure being applied for a wage increase.

Southern Yellow Pine.—In spite of these handicaps and the general business uncertainty of the country the index number of Southern yellow pine rose from 185 in the fourth quarter of 1918 to 200 during the first quarter of 1919. This increase was due to the very low stocks held at the mills, the small production of the mills and the relatively active demand for Southern yellow pine for general industrial purposes.

Most hardwoods suffered a decline during the first quarter of 1919 because wood-using industries had not yet returned to a normal basis and the export trade had not developed to any marked extent.

The start, about mid-year, of the building program to meet the housing shortage led to a brisk demand for general building lumber and prices for all items of stock began to advance very rapidly. This was reflected in prices of Southern yellow pine, whose index number during the second quarter was 216, during the third quarter 285, and during the fourth quarter 329, the total advance during the year being 144 points. The advance during

the year was greater than any which has occurred during a like period in the history of Southern pine and represents 21 per cent of the entire price advance made during the years 1913 to 1919 inclusive. Similar, but less pronounced advances also took place in other general building woods.

Eastern White Pine.—In 1919, the Eastern white pine index number was 163 during the first quarter, 167 during the second, 201 during the third, and 203 during the fourth. Of the total advance of 38 in the relative price of the above wood, 92 per cent came during the third quarter. Eastern white pine dropped 2 points from the last quarter of 1918 to the first quarter of 1919, a slight reduction occurring in all grades. This was due to the slackening of the box trade and other special uses for which white pine is used.

Eastern Spruce and Hemlock.—Eastern hemlock showed an advance of 85 points during the year. Eastern spruce dropped from 184 in the last quarter of 1918 to 173 during the first quarter of 1919, following which it rose to 204 during the third quarter, falling to 202 in the fourth quarter. Of the four softwoods considered in this study, spruce is the only one which showed a decline during the fourth quarter. This was due to the light demand for certain items, especially in "random" and "boards," which led to a drop in price in these items during October and November. The loss in value was largely regained during December. The chief reason for the decline in demand appears to have been that builders exhibited a tendency to hold back on building operations because of the increasing costs of

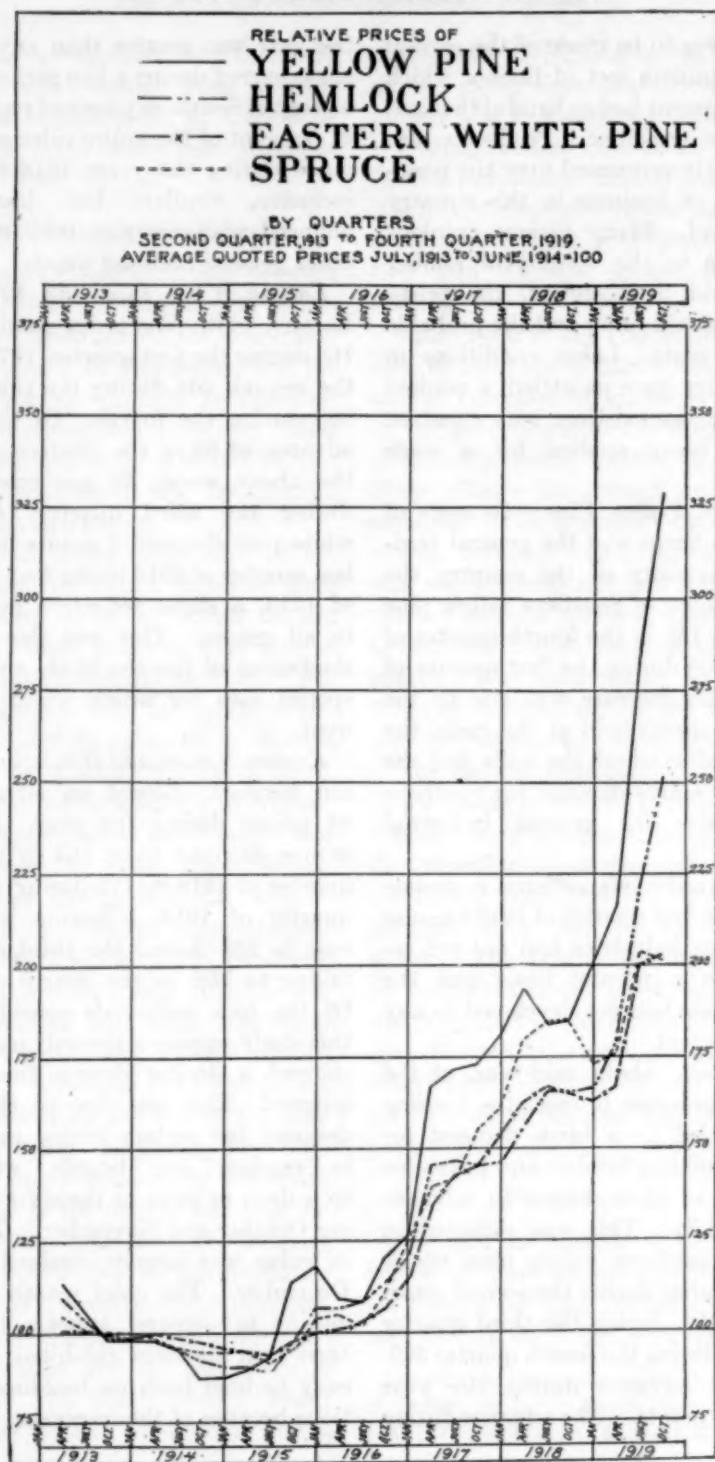


Fig. 1.—Weighted Index Numbers of Prices.—Southern Yellow Pine, Hemlock, Eastern White Pine, and Eastern Spruce. By quarters, second quarter, 1913, to fourth quarter, 1919. (Average quoted prices, July, 1913, to June, 1914 = 100.)

labor and materials. Producers facing a dull market began to make price concessions to move stock. By December a new attitude towards building was assumed by contractors, who again entered the market. This action of the contractors combined with a shortage of lumber due to inadequate transportation, again caused a stiffening of prices. There was but little weakening of the market in "Frames" during the last quarter.

Hardwoods.—Hardwoods showed a marked increase during 1919. The price level of plain oak, hard maple, gum, birch, ash, and hickory, however, dropped during the first quarter of 1919 as compared to the last quarter of 1918, because of the uncertainty which existed in the wood-using industries regarding probable demand for their products during the year. By the second quarter the trend of business was more clearly foreseen and prices for all species began to rise.

A very rapid increase in values occurred during the last two quarters, because unfavorable operating conditions had kept production at a point below demand, stocks at mills were rapidly becoming depleted, and the demand for hardwoods by wood-using industries, which were again on a favorable operating basis, was becoming very strong. The prices offered by hardwood buyers were in excess of any previously paid for the same class of material. The most rapid advance in many hardwoods came during the last quarter of the year, when competitive buying by furniture, vehicle, automobile and similar industries raised prices to an unheard of level.

Gum.—Among those species the prices of which were studied, gum

showed the greatest relative advance during the year, the index number rising from 185 during the last quarter of 1918 to 355 during the last quarter of 1919. Of this advance of 170 points, 56.5 per cent took place during the third quarter of the year, in contrast to most other hardwoods, and 27 per cent during the last quarter. Gum, up to a few years ago, was regarded as one of our "cheap" woods, but the value of the lower grades for box material and the upper grades for furniture and other decorative purposes has raised its price level to a high point.

Ash.—The index number for ash advanced from 172 to 285 during the year, 58 per cent of this increase occurring during the last quarter, and 22 per cent during the third quarter. The chief factor in the advance in the price of this species has been the abnormal demand for this wood by the vehicle and other allied industries.

Birch.—Birch advanced from 158 to 221 from the fourth quarter of 1918 through the fourth quarter of 1919, but due to a decline in the first quarter of 1919, the actual increase for the last three quarters of 1919 was 82 points, 80 per cent of which occurred during the last quarter.

Poplar.—Yellow poplar was one of the two hardwoods included in this study which did not show a decline during the first quarter of the year. The maximum rise came during the last quarter of the year which represented 44 per cent of the 1919 price advance. The rise during the third quarter was 36.5 per cent of that for the year.

Chestnut.—Chestnut showed a slight advance during the early months of

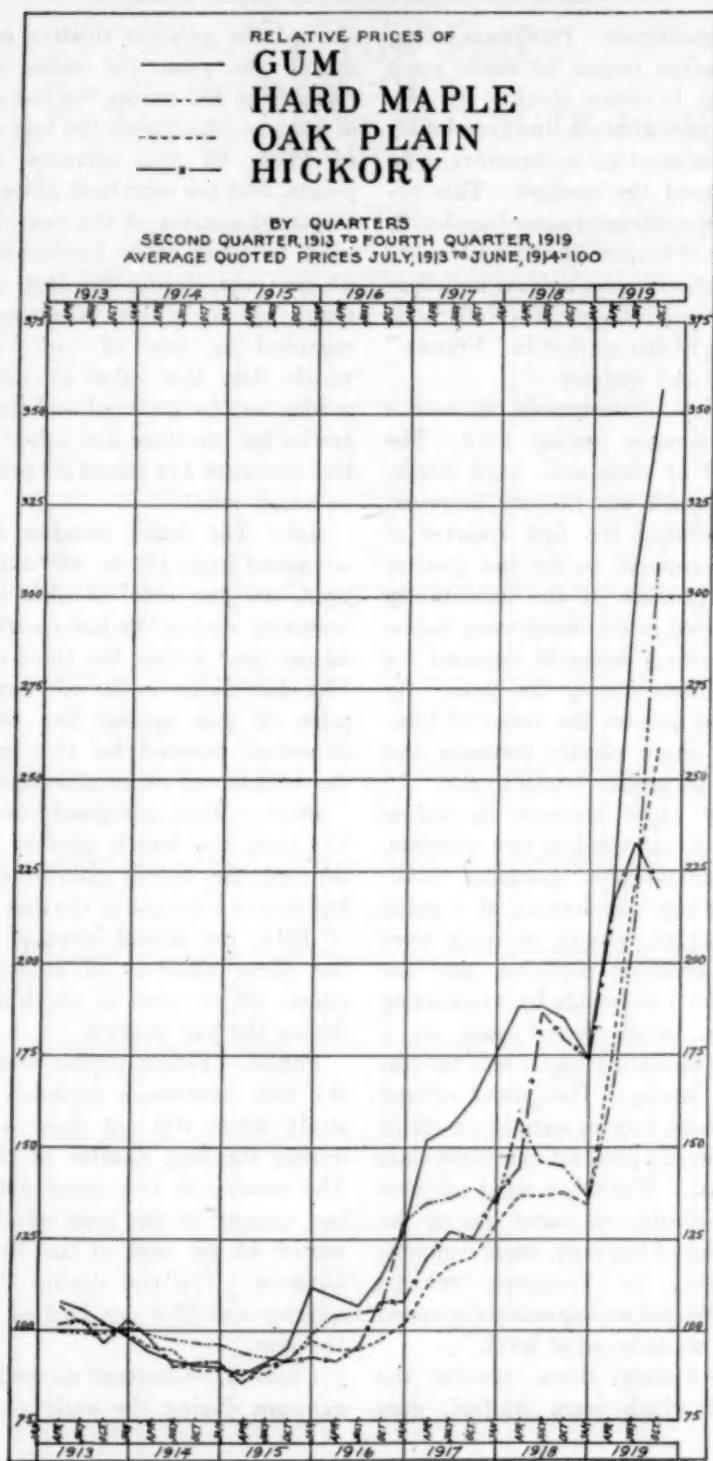


FIG. 2.—Weighted Index Numbers of Prices.—Gum, Hard Maple, Oak, Plain, and Hickory. By quarters, second quarter, 1913, to fourth quarter, 1919. (Average quoted prices, July, 1913, to June, 1914 = 100.)

the year, but during the third quarter it rose 34 points above the second quarter, and during the fourth quarter 28 points above the preceding one.

Hickory.—Prices of hickory declined slightly during the first quarter but rose rapidly during the second and third quarters. In the latter period they were 30 per cent above the last quarter of 1918. The decline during the fourth quarter of 1919 may be attributed to the fact that only two grades of common lumber were available for study and that the demand for the low grades fell off during the latter part of the year. Had prices of the best grades been available the index number for hickory would not have showed this marked decline.

The maximum 1919 lumber price advances, as indicated by the data used, came in the third quarter for all species except yellow poplar and birch, which showed a higher increase during the fourth quarter. Among softwoods the only decline noted at the end of the year was in spruce, and among hardwoods, in hickory.

During the year 1919 the twelve woods forming the basis for this study showed the following per cents increase in relative price: Hard maple 114; gum 92; oak, plain, 87; Southern yellow pine 77; ash 65; hickory 60; yellow poplar 58; chestnut 53; Eastern hemlock 50; birch 40; Eastern white pine 23; and spruce 10. It is, therefore, evident that the maximum relative rise in price was in specialty hardwoods, while the rise in the price of softwoods came in general building woods, with the exception of spruce, which showed the lowest per cent rise during the year. This was due to the average base price of spruce being 60

per cent higher than that for Southern yellow pine and also to the fact that actual advances in the price of spruce were much less because the better grades of Southern yellow pine are adapted for more highly specialized uses in building construction than any of the grades of spruce.

The index numbers for the species mentioned for the years 1918 and 1919 inclusive are shown in Table I, and also graphically for the years 1913 to 1919, inclusive, by Figures 1, 2 and 3.

Lumber Prices Compared with "All Commodities"

The Bureau of Labor Statistics monthly index for "all commodities" and for "lumber and building materials" shows that from December, 1918, to January, 1920, the increase in relative prices was 20.4 per cent for the first group and 63.5 per cent for the second. In only one of the species of lumber mentioned, namely spruce, was the increase below that for the "all commodities" group. Five species showed a greater advance in relative price than the "lumber and building materials groups." Time has not permitted the calculation of the 1918 index number for the species discussed in this article so that the actual increase in the "lumber" group cannot be given. The 1919 index number for the twelve species, discussed in this article, shows an increase of 30 per cent over the 1918 index number for the same twelve species and for Douglas fir. Were it possible to include Douglas fir in the 1919 index, the per cent of increase would undoubtedly be somewhat higher. It is evident, however, that the "lumber" group values have risen at a rate

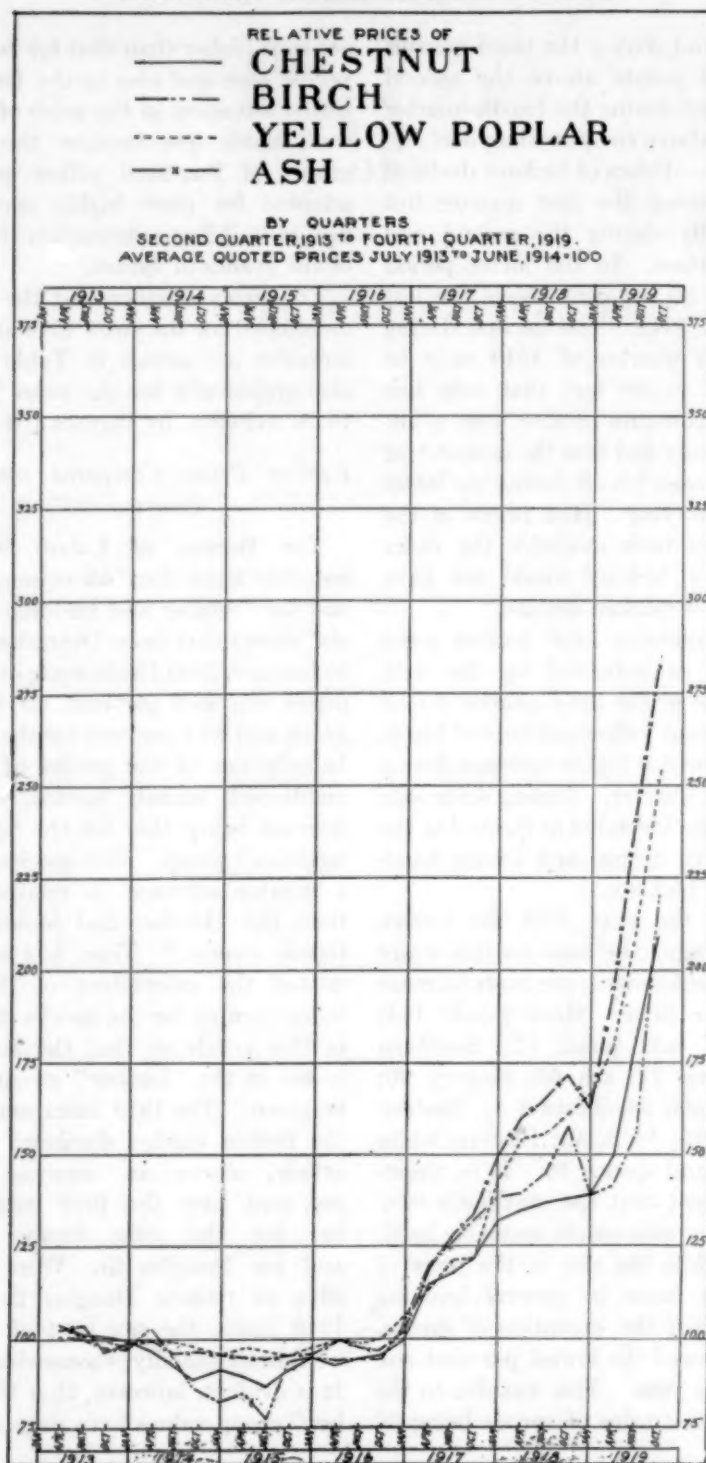


FIG. 3.—Weighted Index Numbers of Prices.—Chestnut, Birch, Yellow Poplar and Ash. By quarters, second quarter, 1913, to fourth quarter, 1919. (Average quoted prices, July, 1913, to June, 1914 = 100.)

at least 50 per cent higher than those for the "all commodity" group. It is not anticipated that this rate of increase will continue long, because further marked advances in lumber prices are doubtful. It is not a matter of surprise, however, that such a rise should have occurred, since for many years lumber was sold on a narrow margin of profit and did not share to the same degree in the advances made by some other groups. For example, the Bureau of Labor Statistics show that from January, 1913, to January, 1919, the "all commodity" group values rose 103 per cent, while that for lumber rose only 67 per cent, and for "lumber and other building materials" 61 per cent.

From the standpoint of national welfare the raising of the lumber price level to a plane more nearly equal to the "all commodities" group may be regarded with favor, since prices in former years have been too low to encourage timber land owners to engage in the production of timber for our future needs. With the present price level, it now becomes practicable to urge the growing of timber crops since the returns promise to be such as to insure a reasonable profit on the investment.

Dangers of Rapid Price Increases

That the rapid price increase during the last year carried with it an element of danger to lumber producers cannot

TABLE I.—INDEX NUMBERS OF LUMBER PRICES FOR THE YEARS AND QUARTERS, 1918-1919 *

	All species	Southern yellow pine	Eastern white pine	Eastern hemlock	Spruce	Oak, plain	Hard maple	Gum	Chestnut	Birch	Yellow poplar	Ash	Hickory
Year 1918.....		186	162	159	177	138	146	184	136	145	154	162	162
1919.....	223	258	182	205	190	196	200	263	170	165	203	215	211
Quarters 1918													
First.....		182	154	147	161	129	135	175	133	139	143	150	132
Second.....		194	163	156	180	137	158	188	135	140	154	160	144
Third.....		184	167	166	184	137	146	188	137	145	156	165	192
Fourth.....		185	165	166	184	138	145	185	138	158	161	172	179
Quarters 1919													
First.....	175	200	163	167	173	135	137	175	139	139	167	162	174
Second.....	193	216	167	178	176	170	161	213	149	142	179	194	215
Third.....	244	285	201	223	204	222	208	309	183	157	213	219	233
Fourth.....	282	329	203	251	202	258	310	355	211	221	254	285	282

* The Index numbers for the year 1918 are taken from *Prices of Lumber* by R. C. Bryant, War Industries Price Bulletin No. 43, Washington, 1919. It was not practicable to secure data on Douglas fir prices, which appear in the above mentioned bulletin; hence a series of index numbers for this species are not included. The prices of all species, except those for spruce, are taken from quarterly f. o. b. wholesale mill prices collected by the U. S. Forest Service, while those for spruce have been compiled from weekly quotations in the Boston wholesale market and published in the *Commercial Bulletin* of Boston. The quotations for Southern yellow pine are from mills in Alabama, Arkansas, Louisiana, Mississippi and Texas; Eastern white pine from mills in Michigan and Wisconsin; Eastern hemlock from mills in Michigan and Wisconsin; oak, plain, from mills in Arkansas, Kentucky, Louisiana, Mississippi, Tennessee, and West Virginia; gum from mills in Alabama, Arkansas, Louisiana, Mississippi, Missouri and Tennessee; chestnut from mills in Kentucky, North Carolina, Tennessee and West Virginia; yellow poplar from mills in Kentucky, North Carolina, Tennessee and West Virginia; hickory from mills in Tennessee; hard maple from mills in Michigan; ash from mills in Arkansas, Kentucky, Mississippi, Missouri, Tennessee and West Virginia; birch from mills in Wisconsin.

be doubted. Instability of prices leads to demoralization of the market, to a reduction in the volume of business and to the stimulation of the growing use of wood substitutes. With this in mind several sales organizations representing large lumber producers in the United States recently announced that their wholesale prices during the first six months of 1920 would be fixed at a point not exceeding the prices quoted on January 15, 1920. This, it is believed, will restore confidence in the buying public and will enable them to outline their buying policy on a definite maximum price.

The reasons for the phenomenal advance in prices in 1919 are not difficult to find, and may be attributed largely to depleted stocks at the mills, low production, serious transportation troubles and increased costs. Of these factors, the first three have been the most important, since the relative increase in price during the last few months has been greater than the increased cost of placing the product on the market.

STOCKS ON HAND, 1916-1919

The situation with reference to stocks on hand in the Southern pine region is shown in Fig. 4, which is based upon the lumber held by the average Southern pine mill for the years from 1916 to 1919 inclusive. From this it can be seen that, with minor exceptions, the stocks rapidly decreased from June, 1917, to September, 1919, since which time a slight accumulation has taken place, due chiefly to the inability of mills to move their product to market because of the lack of cars.

The continued demand for lumber

was such that on January 27, 1920, the secretary-manager of the Southern Pine Association reported that 146 mills had unfilled orders on hand for more than one-half of a billion board feet of lumber—about three and one-half million board feet per mill.

In the Douglas fir region the stocks at the mills steadily declined from January, 1919, when they were 83 per cent of normal, to August, when they were 56 per cent of normal. Since that time there has been a rapid accumulation of lumber, the December stock sheets showing the stocks to be 90 per cent of normal.³ This accumulation is due largely to a serious car shortage which has greatly reduced the volume of lumber which has moved eastward. The Douglas fir price level through the latter part of the year rose rapidly. One grade of Douglas fir (4/4 vertical grain car siding) reached \$100, the first time in the history of this species that such a high price has been obtained for any part of the general mill output.⁴

Stocks at hardwood mills showed a decline of 39 per cent from January 1, 1919, to November 1, 1919, the latest date for which records were available.⁵ There is every indication that the stocks at the end of the year were at a still lower level, with no immediate prospect of bringing them up to a point which would meet even the emergency requirements of the country.

A summary of the reports of eight regional lumber manufacturers associations which was compiled by the

³See Fig. 5.

⁴A Douglas fir price index is not included in Table I because of the lack of data.

⁵Based on a report of the American Hardwood Manufacturers' Association. See Fig. 6.

National Lumber Manufacturers Association, shows that during the year the reported cut was 10,417 millions of board feet, the shipments, 10,081 millions of board feet and the orders, 10,231 millions of board feet. The shipments were therefore 96.7 per cent and the orders 98.2 per cent of production. The industry as a whole, therefore has had but little opportunity to replenish the depleted stocks at the mill, and the country entered

the present year with a relatively low stock of lumber from which to draw. Since production for the last six months for the mills reporting to the National Association was approximately only 80 per cent of normal, the possibility of a price reduction for lumber is not encouraging.

This is especially true, since in many of the large consuming regions the available stocks of lumber at retail yards are at a minimum and badly

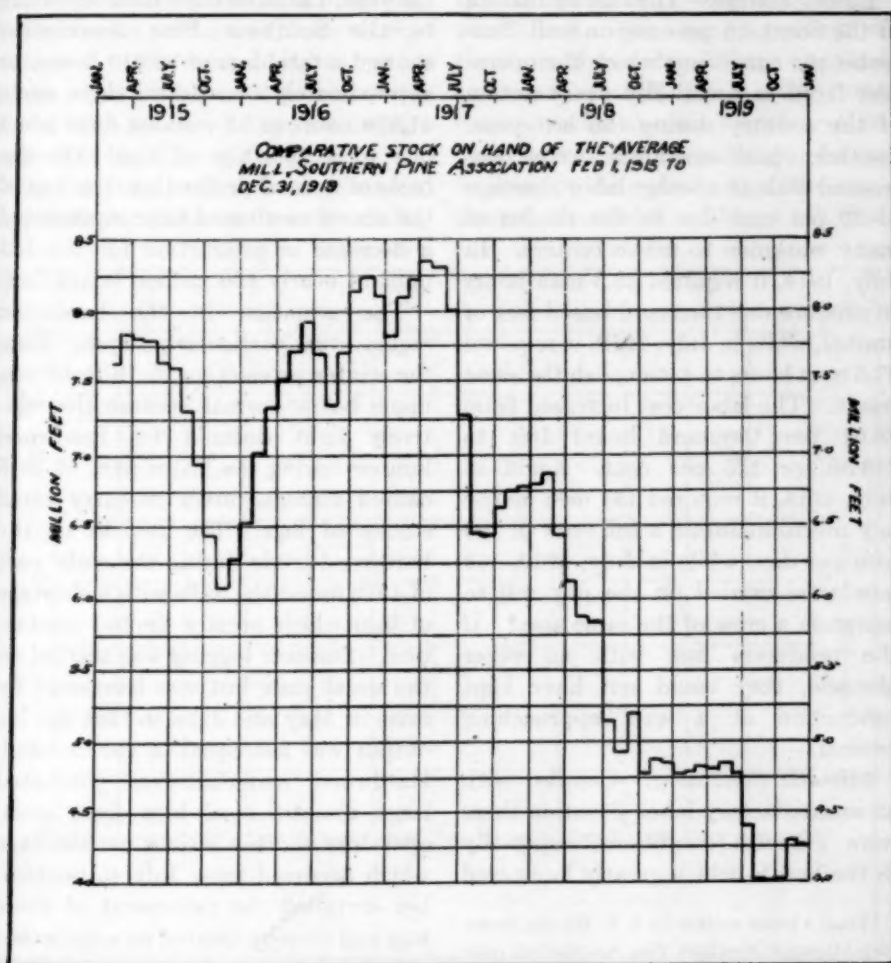


FIG. 4.—Stocks on hand at the average mill, as reported to the Southern Pine Association, February 1, 1915, to December 31, 1919.

broken, and if the prices hold to a reasonable level an unprecedented demand for lumber may be reported during the coming year.

Production in 1919

The reasons for low production in 1919 may be attributed chiefly to the scarcity and inefficiency of labor and the very unfavorable climatic conditions which prevailed during the latter part of the year.

Labor Shortage.—The labor situation in the Southern pine region well illustrates the conditions which the operators faced in practically every section of the country during the last year. Southern pine operators were confronted with an average labor shortage of 20 per cent due to the exodus of many workmen to urban centers. In July, 1914, it required 23.3 man hours to produce one thousand board feet of lumber, while in July, 1919, it required 37.5 man hours to accomplish the same result. The labor cost increased from \$6.01 per thousand board feet to \$13.50, or 125 per cent. Again in July, 1914, it required 134 men on the pay roll to maintain a full crew of 100 men per day, while in July, 1919, 153 men were carried on the pay roll to maintain a crew of the same size.⁶ If the producers met with no other obstacle, they could not have kept production at a level approaching normal.

Climatic Conditions.—Coupled with an unsatisfactory labor situation there were climatic conditions, especially in the South, which greatly hampered

logging operations during the latter part of the year. The logging conditions during the early part of 1919 were favorable, but during the fall and early winter, especially in October and November, the precipitation was several per cent above the average reported for many years, which so reduced the log input that a log shortage occurred which compelled many mills to run on a part-time schedule.

During the first eleven months of the year, 135 subscriber mills reporting to the Southern Pine Association showed a total loss of 80,213 hours, or approximately 60 working days each, 41,878 hours or 31 working days being due to a shortage of logs. On the basis of normal production, the loss of the above mentioned time represented a decrease in production for the 135 mills of nearly 600 million board feet.

The situation in the hardwood region was particularly trying since the winter production in 1918-19 was much below normal because the relatively light demand for hardwood lumber during the latter part of 1918 caused manufacturers to carry small stocks of logs. The revival of the hardwood trade during the early part of 1919 found the mills with a shortage of logs which greatly limited production. Summer logging was started on the usual scale but was hampered by rains in May and June so that the log output was not equal to the demand. Hardwood manufacturers purchased large quantities of logs from small operators and the serious car shortage which occurred from July to September curtailed the movement of these logs and thereby created an unexpected deficit in the supply of raw material at the mills.

⁶From a letter written by J. E. Rhodes, Secretary-Manager, Southern Pine Association, published in the *American Lumberman*, Chicago, February 28, 1920, p. 51.

As a consequence of the various combinations of circumstances, hardwood operators went into the winter of 1919-20 with the smallest log supply in recent years. This will mean a low lumber output, relatively speaking, since logging cannot reach normal before the late spring or early summer of 1920.

In the Northwest the chief factor which has influenced production has been the labor situation, while a car shortage has chiefly affected shipments. In this region production has not been hampered to the same extent as in the South, which is shown by the return of the mill stocks to approximately normal at the close of the year.

Since a large part of the lumber for the domestic trade moves from the

producer to the consumer by rail, the transportation situation has a marked influence on the price at which lumber is sold. In times when the demand for lumber is spirited, the failure of rail transportation to function normally may, and often does, create a marked scarcity of lumber in the larger markets of the country. This was the case during the past year.

From July to September Southern pine operators did not receive more than 60 per cent of their car requirements, and only about 75 per cent of their requirements during the last two months of the year. The west coast situation also was so unfavorable, that it was not possible to deliver lumber in the volume that the consumers demanded. The result has

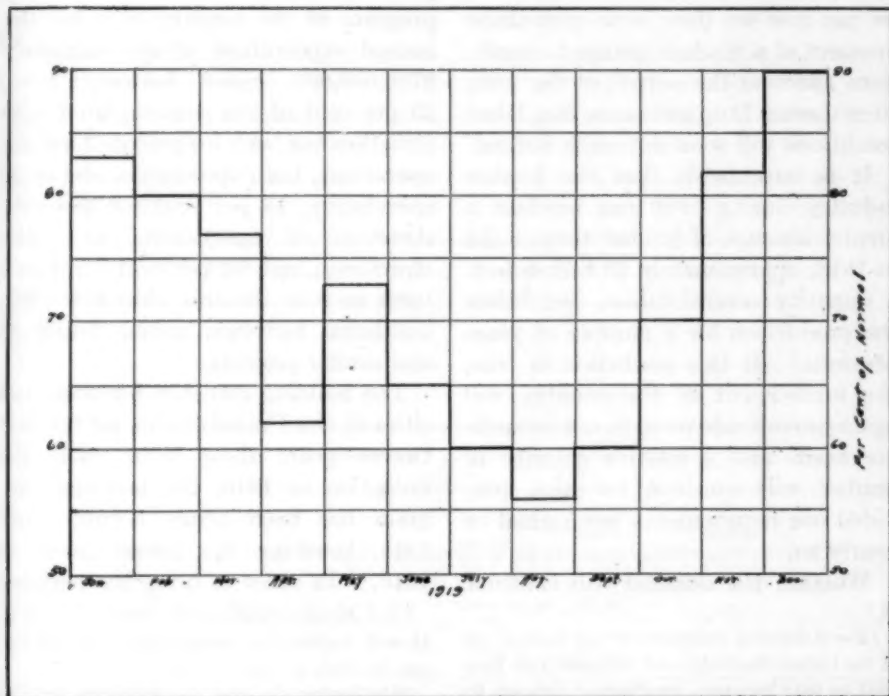


FIG. 5.—The per cent of normal stocks on hand at mills in the Northwest as reported to the West Coast Lumber Manufacturers' Association. January to December, 1919, inclusive.

been an uncontrolled market for such lumber as could be delivered.

Increasing costs of production have played only a minor part in the present price level, since the values at which lumber changes hands are determined chiefly by the competitive bidding of buyers to fill their most pressing needs.

THE FUTURE OF THE PRICE MOVEMENT

There are certain phases of the present lumber situation which furnish some basis for a reasonable prediction of the probable course which lumber prices will take during the course of the present year. Attention has been directed previously to the low stocks now held at the mills and to the sub-normal rate of production in the face of unprecedented demand. As far as we can now see there is no immediate prospect of a marked change in conditions affecting the output of the mills since there is little assurance that labor conditions will soon approach normal.

It is improbable that the lumber industry during 1920 can produce a greater amount of lumber than it did in 1918, approximately 33 billion feet, a quantity several billion feet below the production for a number of years previous.⁷ If this prediction is true, the lumber cut of the country will again prove inadequate to our immediate needs and a relative scarcity of lumber will continue to exist, provided our requirements are normal or nearly so.

Whether the demand will continue

⁷For a detailed statement of the lumber cut of the United States for each calendar year from 1913 to 1918 inclusive, see *Prices of Lumber*, by R. C. Bryant, War Industries Board Price Bulletin No. 43.

as great as it has been during the last few months will depend, it is believed, on whether the prices of lumber can be held to a relatively stable basis. The demand for building materials will not continue unabated if prices tend to rise as they have during the last few months. The need for lumber is as great as ever but the high prices now prevailing already have had a tendency to limit speculative building operations to a minimum and any further advances will undoubtedly cause a cessation of all but the most urgent building needs.

Building Requirements for 1920.—The building requirements of the country were ably summarized by the Brookmire Economic Service a few weeks ago.⁸ In this statement it is pointed out that the average building program of the country calls for the annual expenditure of approximately \$700,000,000. Since January, 1919, 23 per cent of the contemplated construction has been for private building operations, both speculative and non-speculative; 15 per cent for the construction of apartments and like structures; and 62 per cent for structures such as theatres, churches, office buildings, factories, public buildings and similar projects.

The building statistics for some 105 cities in the United States for the last twelve years show that, with the exception of 1916, the building program has been below normal since 1913, touching the lowest point in 1918.⁹ In order to bring the building

⁸The Building Outlook for 1920, by John C. Howell, *Southern Lumberman*, Nashville, December 20, 1919, p. 131.

⁹On January 1, 1919, the *American Architect* estimated that, due to decreased building operations, this country was short 700,000 dwellings.

program up to normal for this entire period the expenditures during 1920 must approximate \$2,500,000,000.

The restriction in building construction for housing purposes is well illustrated by conditions in three of the largest boroughs of Greater New York, namely, Manhattan, Brooklyn and the Bronx, which in 1916 spent \$76,000,000 for dwellings, an expenditure that did not even then fully meet the demand. During 1917 and 1918 the expenditure was approximately \$29,000,000 of which about \$10,000,000 was spent in 1918.

Although we have the immediate necessity for the greatest building program in the history of the country, it is exceedingly doubtful if sufficient capital can be secured to finance even

a reasonable proportion of it, since the present high price of building materials of all sorts and of labor will not in all cases permit the necessary returns on investments made in speculative building.

It is therefore probable, that during the coming year operations will be confined chiefly to necessary building operations. It is doubtful if even the normal program will be met, unless costs become more stable than they have been during the last few months. A great shortage of housing accommodations for our normal population, however, augurs well for a strong future demand for general building woods.

Prospective Demands.—What of other wood requirements? The furniture trade during 1919 reports that

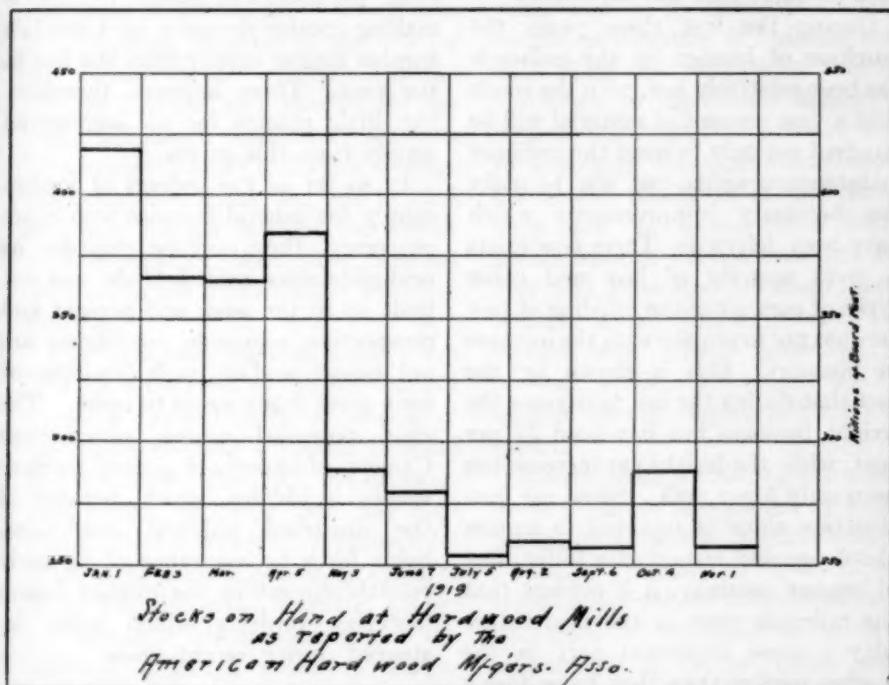


FIG. 6.—Stocks on hand at hardwood mills in the Southern and Eastern districts of the American Hardwood Manufacturers' Association, as reported to the above association. January 1, 1919, to November 1, 1919.

business exceeded expectations, the demand being for the better quality of stock. The industry now has on its books enough business to keep the plants running to capacity until early fall, with prospects of one of the most prosperous years in its history. There is therefore but a slight chance for a diminution in demand for raw material by the industry. Since the furniture trade normally consumes more than 900 million board feet of lumber annually, largely hardwoods, this means a sustained demand for this class of material.

The vehicle and agricultural trade which normally consumes more than one billion feet of lumber is also active and will probably demand a large proportion of its normal requirements both for softwoods and hardwoods.

During the last three years the purchase of lumber by the railroads has been relatively low, with the result that a vast amount of material will be required not only to meet the ordinary maintenance needs, but also to make the necessary improvements which have been deferred. There now exists a great scarcity of box and other types of cars, since the building of new cars has not kept pace with the increase in business. This is shown by the fact that during the last four years the freight business has increased 57 per cent, while the freight car increase has been only 5 per cent. Since car construction alone is reported to require about one and one-quarter billion feet of lumber annually, it is evident that the railroads must in the near future play a more important part in the lumber market than they have during the last few years.

We find in every branch of domestic

lumber consumption an indication of a large demand during the present year which points to an active market for the lumber output of the country.

Imports.—Previous to the war, we were importing, largely from Canada, approximately 1,200,000,000 board feet of lumber and logs (chiefly general purpose woods), 900,000,000 shingles and 565,000,000 laths. These imports, in so far as lumber was concerned, continued to come into this country during the entire war period and long have been recognized as one of our definite sources of supply.¹⁰ That any appreciable increase in our imports from Canada will take place in the future is not anticipated, since Canada faces industrial problems similar to our own, which hamper production. In addition, Great Britain is making greater demands on Canada's surplus lumber supply than she has in the past. There appears, therefore, but little chance for an augmented supply from this source.

In so far as the sources of foreign supply for general purpose woods are concerned, they may be regarded as negligible since such a trade was not built up in the past, and present and prospective economic conditions are not indicative of any such development for a great many years to come. The chief potential source, other than Canada, of imports of general purpose woods, is Mexico, which, because of the disturbed political conditions, holds forth no assurance of an early reestablishment of the lumber manufacturing projects which were destroyed during recent years.

¹⁰ Our imports for 1919 of lumber and logs was 1,241,301,000 M. bd. ft.; shingles 1,987,480 M. pieces; laths 802,651 M. pieces.

The chief forest producing regions of Europe, namely, Russia, Finland, Sweden, Norway, Austria and Poland, are of interest to producers in this country chiefly because of the competition which they offer to American woods in European markets, although it is true that one consignment of Polish oak recently reached this country due to the very high price at which the native oak is now selling in our domestic markets. That an active trade of any volume in Polish woods will be built up in this country in the future, however, is not to be expected.

Exports.—In 1913 we were exporting about 3,750,000,000 feet of logs and lumber to foreign countries, about 8.4 per cent of our cut for that year. Of this amount 79 per cent was composed of softwoods. During that year, Europe received 37 per cent of our forest exports, North America (chiefly Canada and Mexico) 30 per cent; and South America 16 per cent. The foreign lumber trade fell off very markedly during the war and in 1918 was only 35 per cent of the export lumber trade of 1913. The heaviest decrease in the lumber trade was with Europe.

Our European trade in forest products since the close of the war has not shown a marked increase because of the unprecedented domestic demand and the high price level, the unfavorable money exchange and the high shipping rates which have prevailed.¹¹ That there is an opportunity again to enter the European markets, should the domestic demand slacken, is undoubted, although excessive compe-

tition would be met from lumber originating in Scandinavia and Finland. However, this competition can undoubtedly be met by producers in the United States because of the increase in the cost of production in the European countries mentioned, due to the great wage increase and also to the adoption of an eight-hour law in Scandinavia.

A recent estimate places the annual post-war lumber needs of Europe for housing facilities, new construction and for repairs made necessary by the damage done by military operations, at seven billion board feet in excess of normal pre-war requirements, an amount twice as great as our maximum peace time exports.

While there is little chance of Europe being able to purchase such a large additional quantity of building material, there are indications that her purchases in the near future will exceed those made in pre-war years. In supplying these additional needs, the lumber producers in this country have open to them a larger field of export trade in Europe than they have ever had presented to them before, because only Russia, Finland and Sweden can largely increase their pre-war exports of wood products without greatly depleting their forest capital.

Russia, during 1920, as a source of forest products is regarded by English buyers as an almost negligible factor; Finland, because of her internal troubles and unfavorable rate of money exchange, is considered an uncertain element, in so far as lumber supply is concerned; while both Swedish and Norwegian lumber exports during 1919 were below normal, with but little

¹¹ During 1919 our exports of logs and lumber reached 1,247,801 M. bd. ft., about one-third of the 1913 exports.

promise of moving more than normal exports during 1920. In fact, Swedish reports state that the log input during the winter of 1919-20 will be below normal, although this has not been corroborated.

To sum up the situation as regards lumber prices. Indications point to the maintenance of a high relative price level in the future. So far the increase in the wholesale price of lumber has not been reflected to a marked degree in the appreciation of the value of the raw material, stumpage, because of the lack of labor to operate present mills to capacity. There is also the difficulty of securing machinery and supplies to equip new competitive manufacturing plants. It has been the history of the industry that only during comparatively short periods, however, does lumber manufacture yield a large profit, since it attracts new capital into the industry which creates additional competition for raw material, thus raising the price of the latter, and reducing the profits that are available to the manufacturer. Additional competition also tends to lower the price level because

of the keenly competitive character of lumber marketing. While the price level will undoubtedly fall during the course of the next year, it is doubted whether the industry will again ever face a period of low profits such as have overtaken it in the past. The supply of hardwoods is being rapidly depleted, while the end of the Southern pineries, as a vast producing center, is now in sight. Even today about 50 per cent of the output of the South is consumed locally, and this will rapidly increase with a decline in production.

Our lumber values are now approaching those of European countries and it is confidently expected that in the future we must pay a higher price than we have been accustomed to accept up to two years ago, unless we adopt adequate measures to meet the situation.

The sole remedy for averting a period of abnormally high prices for forest products, especially lumber, a few decades hence, has as its foundation stone the maintenance of a sustained yield in our forests, in other words, the practice of forestry.

Minerals as Essential Raw Materials

By GEORGE OTIS SMITH

Director, United States Geological Survey

AMERICAN industry must now meet world-wide competition not only in marketing its product, but in procuring its raw material. To the manufacturer, the problem of getting raw material is one of both supply and cost; he must study sources of raw material with a regard for adequacy and permanence as well as for price. He must plan for the future if his large plant is to continue to serve its complex constituency.

Though we have come to appreciate the size of our mineral industry and to recognize its essential relation to other industries, this idea is by no means new; Washington and Jefferson foresaw the raw-material problem and looked westward for new sources of minerals with which to strengthen the growth of the young nation. It happens, too, that the last public utterance of Lincoln was a message given to Schuyler Colfax on the morning of April 14, 1865, to carry to the miners of the west. "I have very large ideas of the mineral wealth of our nation—its development has scarcely commenced. Tell the miners for me that I shall promote their interests to the utmost, because their prosperity is the prosperity of the nation and we shall know in a very few years that we are indeed the treasury of the world."

AMERICA'S INDUSTRIAL DEPENDENCE UPON MINERAL RAW MATERIALS

To us, these words of the War-President sound prophetic, and indeed

it required another great war to force home to America a full understanding of its industrial dependence upon mineral raw materials. The U-boat threat taught us that certain minerals, even the names of which were unfamiliar to most citizens, were in fact "key" commodities without which basic industries could not operate. Domestic independence in these minerals was the necessity that gave birth to substitutes or called into being new sources of supply.

With the gradual approach of normal conditions of world commerce, however, there has been that return to old ways of thinking that might be expected. There must be some economic limit to this possible self-sufficiency even in a country so wealthy in raw materials as our own. With the question of adequate supply, which was uppermost during the war, is now joined the question of satisfactory price, which regains its old-time prominence with the return of competitive conditions; yet the pendulum of economic thought cannot swing back to its former extreme. The truths learned during the war exercise a drag that ought to keep our thinking somewhat nearer the normal.

QUANTITY VERSUS COST OF MINERAL RAW MATERIALS

The first lesson learned in the experience of meeting the insistent demands of a war program, with its rapidly expanding industries, was to think in terms of quantity of commod-

ity rather than its cost. So while we can no longer afford to pay any price for immediate delivery we realize better that quantity is the truer measure of usefulness and that the totals stated in dollars may not express the advances in industrial growth they seem to show. We have lost some of our old-time faith in the dollar as a standard measure.

Connected with this emphasis upon tons rather than dollars in considering the mineral raw materials is the necessity of thinking in terms of low costs rather than in terms of high prices. The day of excess profits that came through over-high prices ought soon to pass and the day of lower levels of both cost and price ought soon to dawn. The producer of raw materials, whether farmer or miner, surely deserves his share, but in discussing profits to owner or wages to worker the truth should never be overlooked that the market price of the mineral fuel or of the ore is but the starting point of some other industry, and only disaster can result from keeping a price too high. The rôle of the mineral industry is not to exploit markets but to supply consumers.

Industrial expansion on the scale imposed upon our country as its part in the war also cleared our judgment as to value in terms of utility. Gold was not one of the "war minerals," the increased output of which then engaged the best efforts of geologist, metallurgist and mine worker. Gold may have had its place in the war chests of militaristic nations and continues to hold its place as the universal measure of value, but gold is not a raw material whose general utility is at all on the scale of its more

democratic fellows, like iron or copper. Indeed, there is some reason to liken this noble metal, gold, which has so long held the allegiance of mankind, to the idle aristocracy of Europe and to suggest that the more abundant the world's supply of gold, the poorer off we are in the humble but useful things of life. It is a nation's output of coal and iron, petroleum and copper, sulphur and lead, cement and zinc, brick and aluminum, that gives it power, rather than its output of gold and diamonds. The war-time effort to rescue platinum from its associations with luxury and idleness and draft it into the service of war industries was a tardy recognition by the public that this precious metal is also highly useful.

UNITED STATES MINERAL SUPPLY

The dominance of the United States in so many of the essential minerals is proof that nature has placed us in the favored nation class. A simple comparison of the statistics of production and consumption in different countries is enough to prove that America is in the highest degree self-sufficient.¹ In the five important mineral raw materials, coal, iron, copper, lead and zinc, for example, the United States in 1913 showed an aggregate exportable surplus of 24 per cent, whereas Germany's deficiencies in these same essential minerals totaled 40 per cent.

LIMITATIONS TO DOMESTIC INDEPENDENCE IN MINERALS

Yet our industrial leaders cannot disregard the international viewpoint.

¹ Miss Eleanor F. Bliss has presented these facts and discussed their significance in the international readjustment of mineral supplies. *Economic Geology*, Vol. XIV, pp. 147-171, 1919.

Abundance carries responsibility, and domestic independence may be shorter-lived than we suspect. Less than a year and a half ago Professor Leith, in defining the position of the United States in regard to the international control of minerals, classified petroleum with copper as a mineral of which our exportable surplus dominates the world situation.² He regarded his own statement as necessarily somewhat tentative, but having agreed with him at that time I feel free to call attention to the strong proof now put forward by Mr. White that the United States is already dependent upon oil imports.³ Looking forward in copper may soon become an equally evident duty.

Another reason for opening our eyes to the world view of minerals is the connection between industry and commerce. No nation, however self-sufficient, can live profitably unto itself. Even with our wealth of raw materials, there are some minerals that we can buy cheaper than we can produce them and to import the cheaper material may be good business. Of course the immediate advantage of a low price may be outweighed by the ultimate advantage of domestic independence.⁴ But in addition to this consideration there is that of international trade, for in commerce trade balances

as well as economical freight carrying require return cargoes. To win foreign markets for our manufactured goods, our ships must bring to us the food products or the mineral raw materials from the Orient and South America.

The hunt for petroleum to meet our future needs has fortunately begun and should be prosecuted with increasing vigor. Whether oil fields thus opened upon other continents with American capital shall eventually supply crude oil to our home refineries or furnish fuel oil to American bunker stations too far distant to be economically served from our home ports, the supplies needed to develop and operate the foreign fields will come from the United States. An "International Oil" operating in South America means a market for the product of a "National Tube" operating in Pennsylvania. Such investment of American capital in the development of foreign sources will not only yield the raw material needed and afford proper returns on the investment but will create markets for American products. In these respects, it is even better than investment in foreign government bonds. Fortunately, too, transplanting the American type of mining industry in far-off, undeveloped regions is sure to raise the native standards of living, and whether or not we care to count the profits of enlightenment, each step upward calls for kerosene and sewing machines and typewriters. Fair exchange of products is good internationalism.

The future security of the industrial program must be safeguarded, then, by insuring adequacy of supply of all the essential raw materials. In the pioneer stage of our rich country,

² Leith, C. K., *Mineral Resources of the United States*, 1917, Part I, pp. 7a-16a, United States Geological Survey, 1918.

³ White, David, *The Petroleum Resources of the World*. Seq. pp. 111-134.

⁴ The weighing of the emergency and other factors is discussed by the author in a short paper—"Economic Limits to Domestic Independence in Minerals"—*Mineral Resources of the United States*, 1917, Part I, pp. 1a-6a, United States Geological Survey, 1918.

mineral fuels and ores have been cheap—perhaps too cheap—but within the last few years, the American manufacturer has seen these double and treble in cost to him, and the limit has not yet been reached. The inventiveness of American engineering and the high productiveness of American skilled labor together justify the hope of

lowering manufacturing costs without reducing wages, but wise provision for an adequate supply of mineral raw materials also demands attention, even in this favored land, where the bounty of nature has bred that type of optimism that thinks too little of the morrow.

Copper

By B. S. BUTLER

United States Geological Survey

THE copper industry is, and has long been, distinctly a world industry rather than a local or national one. Copper is produced in but comparatively few regions from which the supply is distributed to the peoples who are large users of the metal. Several of the highly industrial states are almost entirely dependent on outside sources, as Great Britain, France, Belgium and Holland, while others, like Germany, can supply but a portion of their needs. Other countries, like Chile and Peru, Mexico and the Belgian Congo, produce large amounts of copper and use but little, while others, like the United States and Canada, both consume and export large amounts. Figure 2 shows the relative production and consumption of the principal countries before the war.

United States.—Before the war the exports of copper from the United States exceeded 50 per cent of the total production and it is apparent that the industry in this country must meet the competition of a world market.

It is also apparent that, at present, North and South America are the greatest sources of supply, while the manufacture of copper is carried on largely in the United States and Europe.

GROWING DEMAND FOR COPPER

The industry became important in the United States about 1845 with the development of the Lake Superior copper district. The rapid advancement

in production has been in response to the greatly increased need for machinery and electrical transmission—the two great uses of the metal. For these two uses no substitute has yet been found that is equal to copper in all respects. That there is bound to be a great expansion in both these uses seems obvious. The production of hydroelectric power is increasing throughout the world and the burning of coal at the mine and transmission of power is likely to make steady progress. It is perhaps not too much of a dream to picture, at no very distant date, an interlocking power system that shall cover the eastern part of our country, for example, utilizing the available water power and supplementing this power by coal. This system will furnish power for traction, manufacturing, light and heat. As oil begins to fail, as the geologists tell us it soon will, the motorist of the future may stop at the service station for “juice” instead of “gas.” If development lies in the direction suggested, within the next score of years we may see quite as intensive a campaign to develop copper mines as we are now witnessing in the search for oil. In fact, the large exploration companies already foresee a great future demand and are acquiring territory that has promise of yielding copper wherever it is to be found.

War Demand for Copper

In the past the output of copper has been controlled by the demand. For

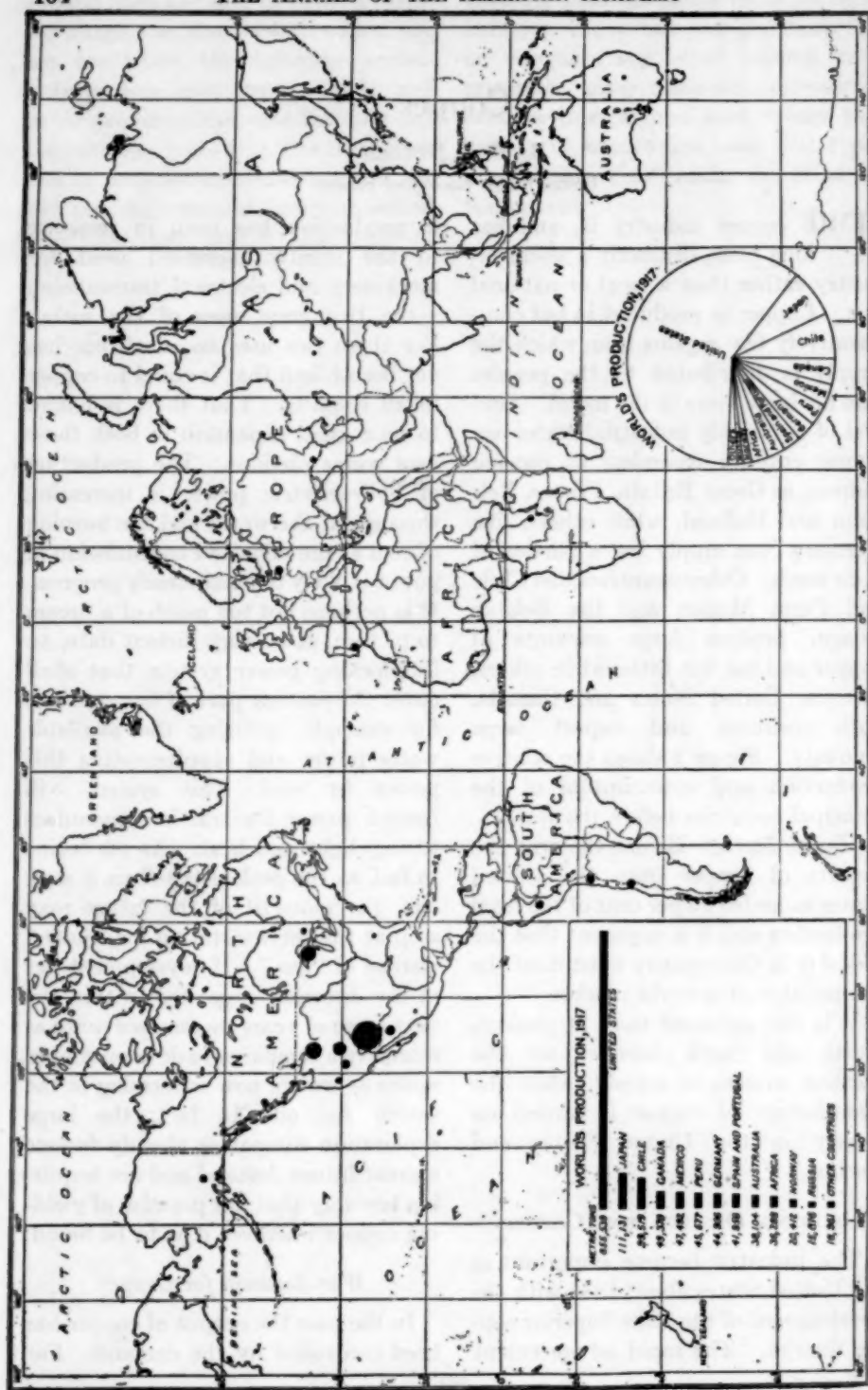


FIG. 1.—Map showing location of principal copper producing centers of the world. Size of circle indicates relative size of output. From Mineral Resources of the U. S. 1917, U. S. Geological Survey.

several years before the war the capacity of copper mines was in excess of the demand for copper and the increase in the capacity of metallurgical plants had been guided by the probable need for the metal. Thus, until they were hampered by shortage of labor the mines were easily able to meet the unusual demands caused by the war. But it required some time to bring the metallurgical plants up to the same capacity. The increased need for copper for war purposes was proportionately greater than for most of the

major metals, thus, as compared with iron, it shows the following ratio: For the period of 1880 to 1885 there was produced in the world one ton of copper to 104 tons of iron; for the period 1911 to 1915 the ratio was 1 to 70; in 1913 the ratio was 1 to 79; in 1914, 1 to 66; in 1915, 1 to 61; in 1916, 1 to 53; in 1917, 1 to 52; and in 1918, 1 to 54. This war demand has tended to develop an excess of copper-producing capacity over that required for peace times, a condition which is emphasized by the fact that a much

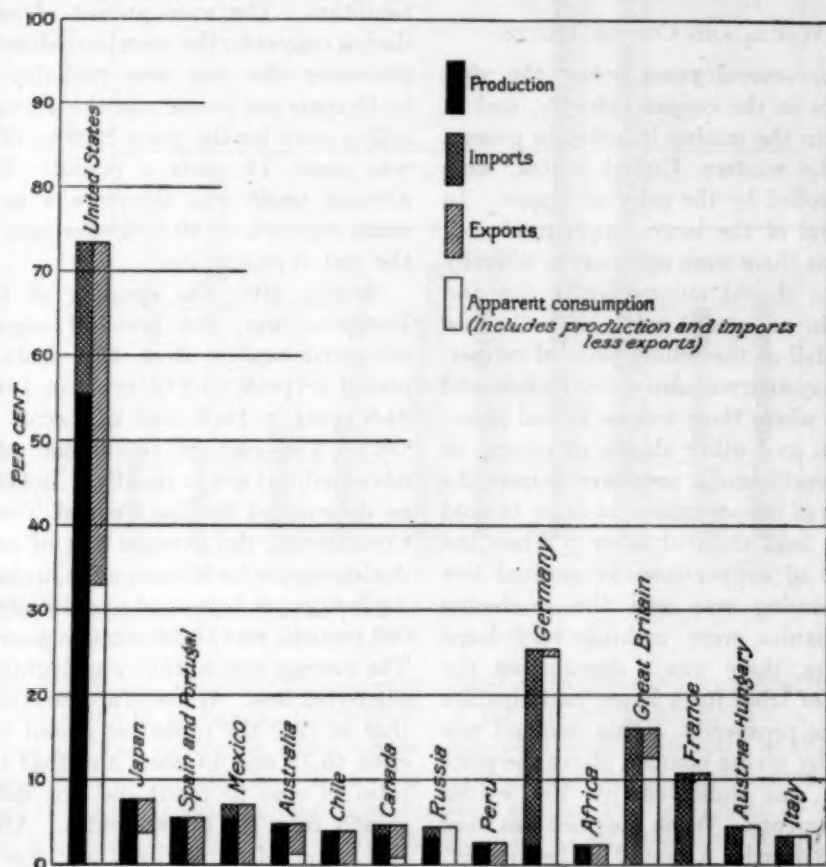


FIG. 2.—Relative production, consumption, imports, and exports of copper by the principal copper producing and consuming countries in 1913. From Mineral Resources of U. S. 1917, U. S. Geological Survey.

larger proportion of copper than of iron that has entered into war uses can be converted into peace-time uses. Furthermore, so far as the United States is concerned the slow recovery of European countries from war conditions and the severe drop in the rate of exchange has hampered export business. There was, however, a steady increase in the amount of copper used for peace-time industry as compared with iron before the war and the temporary unbalancing of the ratio by the war will doubtless soon disappear.

WAGES AND COPPER PRICES

For several years before the war, wages in the copper industry, and in fact in the mining industry in general in the western United States, were controlled by the price of copper. In several of the large copper-producing camps there were agreements whereby wages should automatically rise and fall in an agreed ratio, with the rise and fall of the selling price of copper. This system was also generally followed even where there was no formal agreement, and other classes of mining in the west found it necessary to meet the wage of copper miners in order to hold their best class of labor. When the price of copper rose to unusual levels during war and the producing companies were making very large profits, there was a demand on the part of labor for a larger participation in the prosperity. This demand was met by giving bonuses above the price that was indicated by the earlier agreements. When the price was fixed at 23.5 cents a pound in September, 1917, by agreement between the producers and the government, it was stipulated that wages should not be

reduced and from that time there has been no close relation between the price of copper and wages in the sense of the pre-war agreements. After the close of the war, when the price of copper fell, it was found that the high cost of living made it impractical to return to the pre-war schedule, and in places where wages were greatly reduced it was found necessary to again raise them in order to hold a desirable class of labor.

Before the war the copper mining industry had been in a prosperous condition. The average cost of producing copper for the years immediately preceding the war was probably 9 to 10 cents per pound and the average selling price for the years 1909 to 1913 was about 14 cents a pound. The average profit was therefore 4 to 5 cents a pound, or 40 to 50 per cent of the cost of production.

Shortly after the opening of the European war, the price of copper advanced rapidly from 13.3 cents a pound in 1914, to 17.5 cents in 1915, 24.6 cents in 1916, and 27.3 cents in 1917. The cost of production also advanced, but not as rapidly. In 1918, as determined by the Federal Trade Commission, the average cost of producing copper for 85 companies, including foreign production of over 400,000,000 pounds, was 16.167 cents a pound. The average cost in 1917 was doubtless somewhat less. It would appear, then, that in 1917 the profit per pound had risen to 12 and 13 cents and that the ratio of cost to profit did not differ greatly from the pre-war ratio. After the fixing of the price there was a decrease in the profits and in the ratio of costs to profits and a further decrease following the close of the war when the

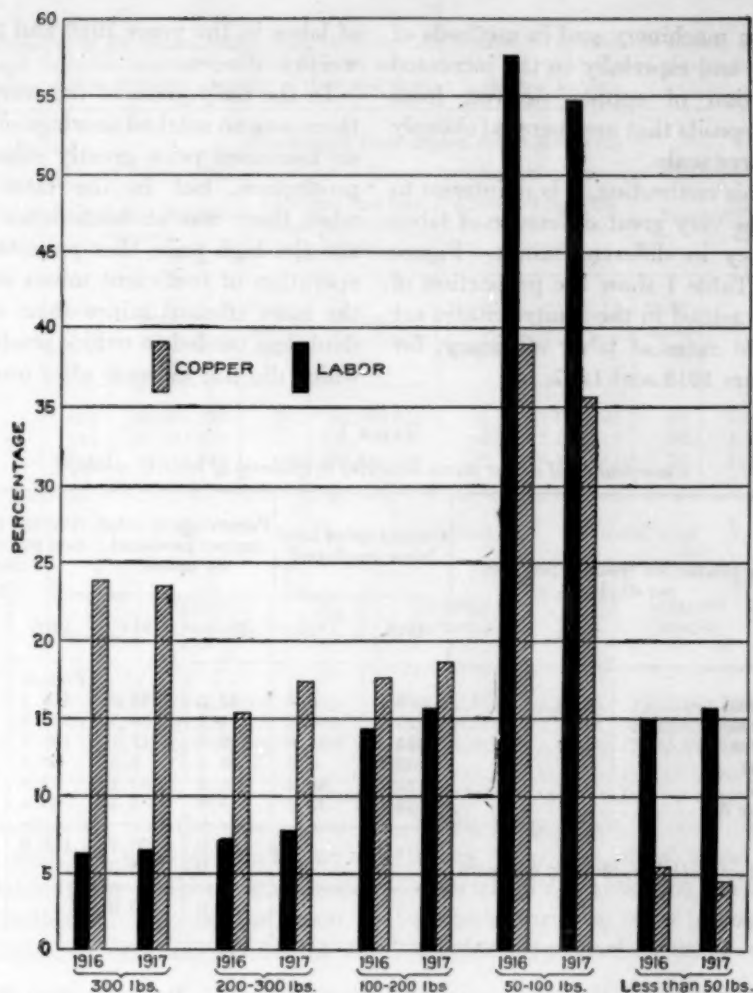


FIG. 3—Labor employed and copper produced in different classes of copper mines, 1916 and 1917. From Mineral Resources of the U. S. 1917, U. S. Geological Survey.

selling price fell. There was a decrease in costs due to increased efficiency of labor and the closing of mines where the costs were high, but there was undoubtedly a great decrease in profits, a condition which has continued to the present.

EFFICIENCY IN COPPER MINING

The increase in the amount of copper that has resulted from a day's

labor is a notable and gratifying feature of the copper industry. Thus, in the five-year period from 1912 to 1916 the average amount of copper mined per man per day increased from 75 to 100 pounds. This does not include labor for transportation and metallurgical treatment. An increase of 20 per cent in days worked per year produced an increase of 62 per cent in copper mined. This increase is due largely to improve-

ment in machinery and in methods of mining and especially to the increased proportion of copper derived from large deposits that are operated cheaply on a large scale.

In this connection, it is of interest to note the very great difference of labor efficiency in different mines. Figure 3 and Table I show the proportion of copper mined in the United States at different rates of labor efficiency, for the years 1916 and 1917.

of labor in the years 1916 and 1917, is worthy of note.

In the early years of the war, when there was no marked shortage of labor, an increased price greatly stimulated production, but in the later years when there was an acute labor shortage the high price that permitted the operation of inefficient mines and left the more efficient mines short of men doubtless tended to reduce production, which did not increase after our entry

TABLE I

Classification of copper mines according to efficiency of labor in mining

Mine production (pounds per man per day)	Percentage of total labor employed		Percentage of total copper produced by mines		Average production per man per day	
	1916	1917	1916	1917	1916	1917
Above 300.....	6.2	6.4	22.5	22.5	Pounds 416.1	Pounds 371.8
200 to 300.....	7.2	7.7	14.2	16.5	230.0	227.9
100 to 200.....	14.2	15.6	16.2	17.7	133.3	120.5
75 to 100.....	39.0	6.5	26.6	5.5	78.9	90.5
50 to 75.....	18.4	48.2	9.5	30.1	59.6	65.1
Less than 50.....	15.0	15.5	5.0	4.4	38.5	30.1
By-product and labor efficiency unknown.	.....	.....	94.0	96.7	108.9	102.2
	.....	.....	6.0	3.3	.....	.....
	.....	.....	100.0	100.0	.....	.....

Table II shows the copper output of the country classified by the size of output of the mines.

The most striking feature of this table is the large increase in the number of small mines from 1913 to 1916 and 1917 without a correspondingly large increase in the copper produced. On the other hand, the large mines showed but a moderate increase in number, but from 1913 to 1916 a very large increase in the production of copper. The effect of the high price of copper, combined with the shortage

into the war. It would seem that in a crisis like the war, we cannot rely explicitly on an increase in price of a commodity to bring an increased production; and that in a commodity like copper, where there was but a limited supply of labor that could be fairly assigned to that industry, it is the part of wisdom to employ it in the most efficient mines, rather than to encourage prospecting and inefficient mining by making the price so high that such operations can be carried on profitably.

TABLE II

Copper output of the United States 1913, 1916, and 1917, classified by mines in which copper was the most important constituent and by those in which it was a by-product, and the production of the copper mines classified according to their contribution to the total output.

Year	Production from copper mines producing—							
	Less than 1,000,000 pounds		1,000,000 and less than 5,000,000 pounds		5,000,000 and less than 10,000,000 pounds		10,000,000 pounds or more	
	Number of mines	Quantity (pounds)	Number of mines	Quantity (pounds)	Number of mines	Quantity (pounds)	Number of mines	Quantity (pounds)
1913.....	492	22,960,797	36	93,088,952	11	78,178,256	24	1,004,634,383
1916.....	914	50,497,875	55	131,708,061	12	92,125,118	30	1,703,393,730
1917.....	1,006	50,641,988	58	130,596,600	16	106,458,988	32	1,579,590,348

Year	Total		Copper by-product		Grand total		Average price of copper (cents per pounds)
	Number of mines	Quantity (pounds)	Number of mines	Quantity (pounds)	Number of mines	Quantity (pounds)	
1913.....	503	1,198,862,388	883	36,707,339	1,446	1,235,569,727	15.5
1916.....	1,011	1,977,724,784	837	28,150,528	1,848	2,005,875,312	24.6
1917.....	1,112	1,867,287,924	813	28,146,425	1,925	1,895,434,349	27.3

Whether or not the price fixed in 1917 met the ideal of employing all available labor without encouraging its inefficient use, may be open to question. It certainly tended to dis-

courage operation of very inefficient mines. On the other hand, it was criticized for not allowing the same proportionate rise in price to copper that was being received by other commo-

TABLE III

Year	General index number	Price per pound of copper calculated from general index	Average actual price per pound received for copper
1910.....	99	13.95	12.7
1911.....	97	13.67	12.5
1912.....	101	14.24	16.5
1913.....	102	14.38	15.5
1914.....	101	14.24	13.3
1915.....	102	14.38	17.5
1916.....	125	17.63	24.6
1917.....	178	25.10	27.3

ties. The amount of this difference is indicated in Table III. The general index prepared by the United States Department of Labor is presented and compared with copper. The base is the average of the five-year period 1910 to 1914.

It is apparent that during the period

1915 to 1917 the price of copper was high relative to the general advance in commodities. It is also apparent that the price agreed upon between the copper producers and the government was considerably below the figure that is indicated by the general advance in commodities.

The Petroleum Resources of the World*

By DAVID WHITE
United States Geological Survey

INTRODUCTION

PETROLEUM in the United States is a wasting asset so far depleted as no longer to afford a secure foundation for the obligations based upon its assumed continued adequacy. Barring unexpected good fortune in the search for new supplies, or even less unexpected curtailment of consumption, the petroleum production of the United States is likely not only never again wholly to meet our requirements but even to start soon on the long decline of a waning output.

For the first time in her history the United States is witnessing the day when one of her greatest stores of mineral wealth—her most dazzling and spectacular endowment, on which her prosperity, industries, and standards of living are so largely dependent, and which imparts a characteristic and essential quality to her civilization—is approaching exhaustion and so is no longer able to meet her growing necessities. After sixty years of prodigal generosity and profligate waste she discovers that her oil heritage is far spent and that henceforth she must become more and more dependent on the stores of other countries. The purpose of this article is to review our domestic supplies and to consider their life and the extent to which they may supply our prospective needs; to present a rough attempt at an appraisal of the oil resources of other regions of the

world based on our present most insufficient and fragmentary knowledge, and to call attention to the necessity for assuring the protection of this country by securing, even under increasingly unfavorable competitive conditions, sufficient oil reserves abroad to provide for our needs as long as oil is available to meet the requirements of other nations.

OIL FIELDS OF THE UNITED STATES

Oil Remaining Available in the Ground

The quantity of oil remaining available in the ground in the United States in January, 1919, was conservatively estimated by the oil and gas geologists of the United States Geological Survey at 6,740,000,000 barrels.¹ By "available" is meant recoverable by present methods of production. About one-half of these reserves are heavy oils.

A word should be offered as to the basis of this estimate, its mode of preparation, and its probable range of error. It is based on the results of the personal examinations of many of the producing and possible oil regions of the United States by the different geologists; on reviews of the production histories of the discovered or developed fields in this and other countries; on the geological conditions of occurrence of oil fields in all parts of the world and comparison

¹ White, David, "Unmined Supply of Petroleum in the United States," *Jour. Society of Automotive Engrs.*, Vol. 12, No. 5, 1919, pp. 361-363. Estimates for the various regions are given on p. 362.

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of these oil fields with geologically similar but untested regions in United States; on the study of the structure, composition, alteration, sequence, and relations of the geologic formations, and on the critical review of surface indications, well records, sections, well production curves, sand characters, water relations, etc. It represents, for the most part, the weighted best, but deliberately conservative judgments of these geologists in conferential consideration of all the data then available. It does not differ greatly from the results of two previous estimates made by geologists of the Survey, and it is probably the best founded and most reliable estimate yet formulated. Nevertheless, it is of necessity highly speculative, for, as every geologist knows, an estimate of a commodity so intangible and fickle as oil in the ground, especially in undeveloped and untested regions, is, at best, one in which many of the elements are merely scientifically calculated guesses in the formulation of which all lines of evidence are taken into account and weighed with the experience and judgment acquired in other regions. However, conceding that for many areas in the country the information is very fragmentary and inadequate, that there are many factors controlling the distribution of petroleum that are not yet understood by geologists, and that consequently such an estimate must necessarily be wildly speculative and subject to great latitude of error, it may nevertheless be argued that the progress of geologic examinations of the country and of exploration by the drill has gone so far, the principal factors of oil control are sufficiently proven, and the results of development are now so voluminous

that it is highly improbable that the error is more than 50 per cent. An error of 75 per cent seems so improbable as not to justify serious consideration at present.

On the basis of an estimated 6,740,000,000 barrels available in the ground in January, 1919, there should now (February, 1920) remain, in round numbers, 6,325,000,000 barrels. However, as stated, this estimate was published as distinctly conservative, though mention of this fact has not been made by those quoting it. At the present moment it appears as unlikely that the amount of oil that will actually be recovered will fall under 6,000,000 barrels as that it will be found to be more than 8,000,000 barrels, or about 25 per cent in excess. Therefore, viewing 6,325,000,000 barrels as distinctly conservative, 7,000,000,000 barrels may be regarded as a moderate but not distinctly liberal estimate of the oil remaining available in the ground in the United States February, 1920.² The estimate is subject to revision as exploration, including both the investigations by the geologists and tests by the drill, goes forward, and it will be revised from time to time.

Progress in Exhaustion of Domestic Deposits

Oil is now being taken from the ground in the United States at a rate very closely approaching 400,000,000 barrels per annum. This is five times the rate in 1901 and twice that of 1909. At the close of 1919 approximately 4,986,300,000 (nearly 5,000,000,000)

² A more liberal estimate by my colleague, E. W. Shaw, is "8 or 10 billion barrels." Proc. Nat. Gas Assoc. America, Cleveland, May 20, 1919. *The Income and Expense of Natural Gas Production*, p. 6.

barrels of oil had been produced in this country, since the Drake well was drilled in 1859. This is about 43 per cent of the original recoverable contents as estimated. All this oil that has been mined in the United States in sixty years would be taken out in thirteen years at the present rate of production. Impressive as this fact may be, it is less alarming than the realization that the recoverable oil in this country, according to the conservative estimate, would probably be practically exhausted in seventeen years if the 1919 rate (nearly 380,000,000 barrels) of production could be maintained for so long, while a reserve of 7,000,000,000 barrels, the moderately liberal estimate, would disappear in eighteen and one-half years. If an improbable excess of 2,500,000,000 barrels over the estimated amount be present, this excess would be enough to sustain the present draught for six and one-half years additional.

What improvements will in the next ten years be made in the process of extraction of the oil from the ground, and what the effects may be in recovering the great amounts of oil not "available" or recoverable by present methods remains to be seen. It is most important that studious attention be given to the problem of the more complete extraction of the oil than is possible by the methods now in general use. The estimated available supply should be increased in this way to the maximum.

Fortunately, the oil cannot so soon be taken from the ground. Even unheard of prices for crude, and scourging of the ground far more severe than that now in progress cannot within the next generation disclose all the oil pools in the strata, and though devices for

more rapid extraction may be invented and applied, the fields yet to be discovered cannot be drained so rapidly. Oil pools will be found, finally by accident, long after the search has waned and even in the next century. These are some of the reasons why, as will further be explained, the production of natural petroleum in the United States must pass its peak at an early date—probably within five years and possibly within three years—though the long sagging production curve may be carried out beyond the century.

The curve of the domestic production of petroleum, as compiled from statistics furnished by G. B. Richardson, geologist in charge of statistics of petroleum in the United States Geological Survey, is given in figure 1. It shows that for the last eight years the annual increase in the petroleum production of the United States has averaged around 20,000,000 barrels. The greatest increase (nearly 25,000,000 barrels) in marketed production was in the war year, 1917. The actual production increase from 355,927,000 to nearly 378,000,000,³ or about 22,000,000 barrels in 1919, as indicated by Mr. Richardson's preliminary figures, was due mainly to the unprecedented advances in oil prices, which have been the cause of wildly speculative activity in the oil business throughout the country, and, in part, to the fortunately wide extent and the profuse initial productivity of the north-central Texas district.

In January, 1919, when discussing the probable trend of the production of

³ It is expected by Mr. Richardson that the statistics of oil used in the field, and other items not yet reported will raise the total production for 1919 to about 380,000,000 barrels of 42 gallons.

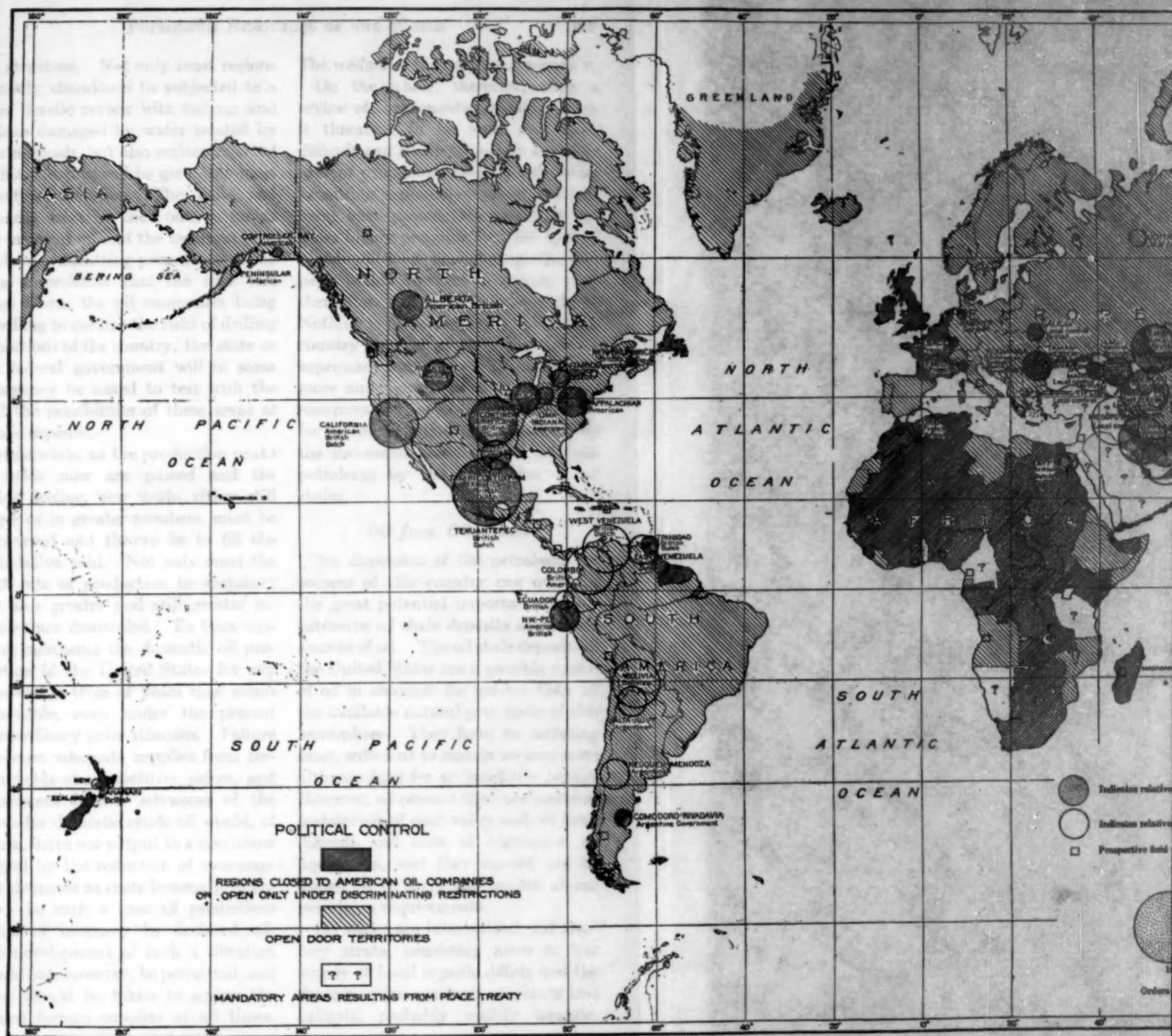
petroleum in the United States,⁴ I expressed the view that the output of oil in 1919 could only with great difficulty be made to increase abreast of the increase of consumption in 1919, and that possibly within three years, and very probably within seven years, the production of this country would pass its climax, notwithstanding the growing deficiency as compared with the needs of the country. The increase in the output for 1919 seems at first largely to controvert this conclusion or at least to put farther ahead the beginning of the decline. However, even its significance as indicating postponement of the evil day is likely to be overestimated. The trend of the production curve has been maintained and the output forced upward in 1919, mainly by a great increase of over 3,500 (14 per cent) in wells drilled as compared with 1918,⁵ and an enormous influx of capital, notwithstanding great and inexcusable waste of the latter. The energy, funds and equipment applied to the winning of oil from the ground promise to be even greater in 1920, though many holders of stock in the hordes of misguided or fraudulent oil companies are doomed to disappointment. In view of the augmenting forces concentrated in the struggle and the considerable proven areas of very rich territory ready for drilling, it seems probable not only that the 1919 rate of petroleum production will be more than maintained in 1920, but that, under the favoring influence of high prices still advancing and the prospect

of a continued increase in consumption, the normal annual increase of 1919 will be exceeded. Besides responding to increased costs of production, the remarkable advances in crude oil prices are to be regarded as reflecting also both the deficiency in our domestic output and an apprehended difficulty in securing foreign oil in amounts sufficient to satisfy our growing requirements.

As north-central Texas (the so-called Ranger district) falls off in petroleum yield it is probable that the domestic output will receive support from the formerly withdrawn and other public oil lands in Wyoming and California which are at this moment being made available for leasing; the Gulf Coastal Plain will doubtless for a long time make contributions, with Louisiana giving immediate assistance, and the Mid-Continent region—the Osage for example—undoubtedly contains important undiscovered pools. With the decline of the Ranger district, oil companies will give attention to regions hitherto regarded as more or less unfavorable, and older oil states will be reexamined. Oil will be found and developed in some of the regions of Wyoming, Utah, Colorado, Montana and Alaska, which are not now viewed very hopefully, and, probably, New Mexico, Washington, Oregon and some other possible states. Oil men are certain to return to find new production, probably in minor amounts, in Kentucky and will more thoroughly search Illinois, Indiana, Tennessee and the northern Appalachian region. Michigan will surely be further tested, with chances for some success, notwithstanding the thick mantle of drift which so nearly blankets the underlying

⁴ *Journal, Association of American Automotive Engineers*, Vol. IV, No. 5, 1919, pp. 361-363. Printed in advance of meeting, February 4-6, 1919.

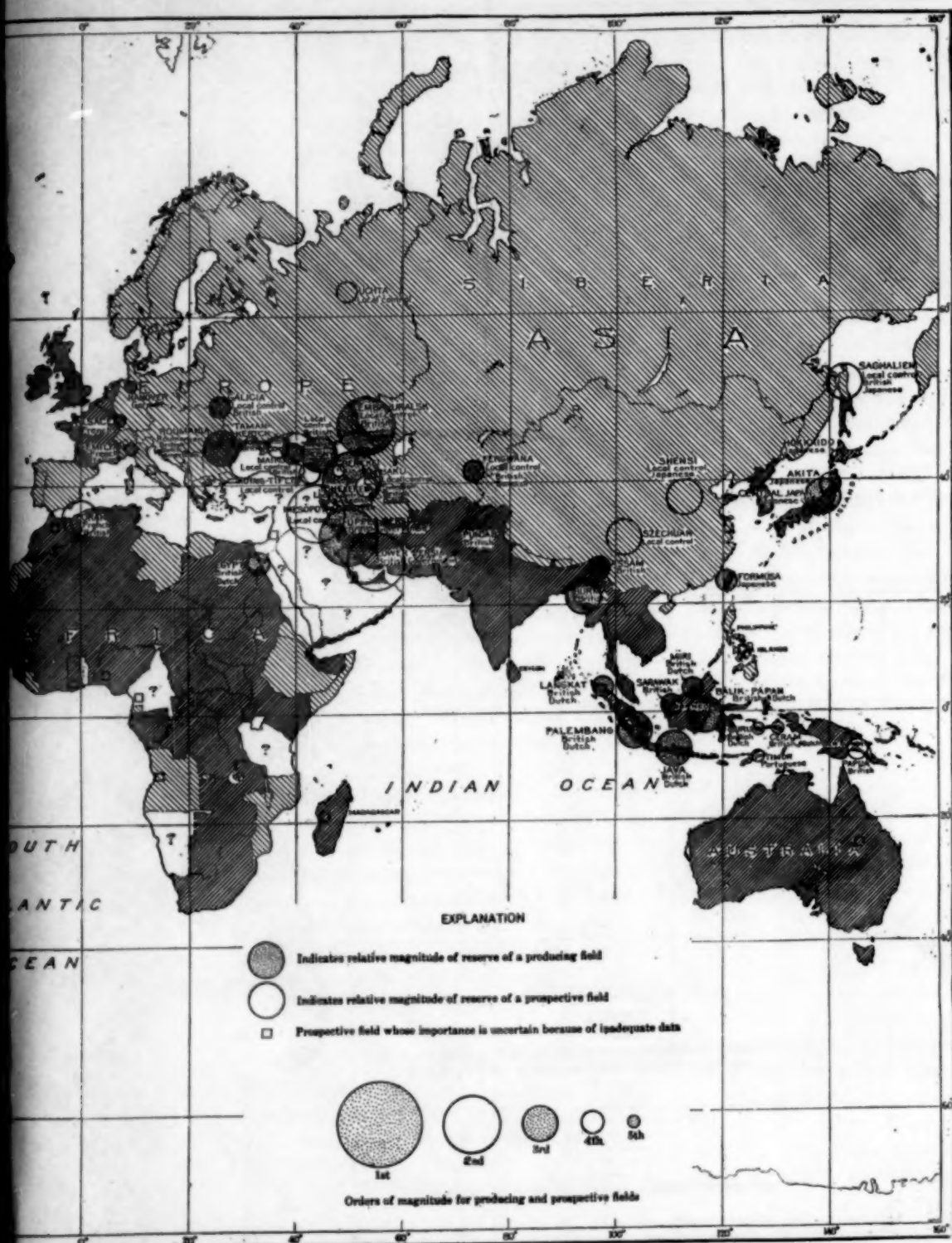
⁵ *Oil and Gas Journal*, January 23, 1920, p. 50.



WORLD MAP OF DEVELOPED AND POTENTIAL PETROLEUM RESERVES

PREPARED BY THE U. S. GEOLOGICAL SURVEY

1919
COMPILED BY EUGENE STEBINGER



POTENTIAL PETROLEUM RESERVES

GEOLOGICAL SURVEY

E. STEBINGER

ing structure. Not only must regions formerly abandoned be subjected to a more drastic review with testing, and regions damaged by water treated by new methods, but also regions rejected without testing will be given the most scientific attention. The culls and discards must be tried out, so far as the prices of oil and the resultant proceeds of wildcatting permit. It is far from improbable that the time will come when, the oil companies being unwilling to assume the risks of drilling in portions of the country, the state or the federal government will in some emergency be asked to test with the drill the possibilities of these areas at public expense.

Meanwhile, as the production peaks of fields now are passed and the yields decline, new fields, either still larger or in greater numbers, must be discovered and thrown in to fill the cumulative void. Not only must the 1919 rate of production be sustained but also greater and still greater increases are demanded. To thus continue increasing the domestic oil production of the United States for any appreciable term of years now seems impossible, even under the present extraordinary price stimulus. Failure to secure adequate supplies from foreign fields at competitive prices, and consequent further advances of the prices for domestic crude oil would, of course, drive our output to a maximum limited by the reduction of consumption demands as costs become prohibitive. In such a case all predictions would of necessity be declared off. The development of such a situation should not, however, be permitted, and steps should be taken to assure the needed foreign supplies at all times.

The welfare of the country demands it.

On the whole, therefore, after a review of the domestic fields, in which it threatens to be more and more difficult and costly to sustain even the present production rate after the most promising regions now under development have passed their peaks, it appears highly probable that the United States will have passed its production peak within five years or very soon thereafter, and possibly within three. Nothing is more certain than that this country must at an early date lose its supremacy in the oil world and become more and more dependent on the oil resources of other lands, except in so far as the situation may be saved by the successful production of artificial petroleum by the distillation of oil shales.

Oil from Oil Shales

No discussion of the petroleum resources of this country can overlook the great potential importance of our extensive oil shale deposits as possible sources of oil. The oil shale deposits of the United States are a possible source of oil in amounts far greater than all the available natural petroleum of this hemisphere. They form an enduring asset, sufficient to sustain an enormous ultimate load for an indefinite period. However, at present they are assets of undetermined cash value and, at best, difficult and slow of conversion or liquidation, and they cannot yet be drawn on to carry the burden of our petroleum requirements.

Oil shales are interbedded, sedimentary strata, consisting more or less largely of fossil organic débris and the decomposition products of plants and animals, probably mainly aquatic.

When sufficiently free from clay, sand, or other mineral matter, the oil shale layers or beds present both physical and chemical features characteristic of cannel coals, to which they are genetically related and into which they grade. Like other members of the cannel group, these fossil organic deposits are characteristically high in hydrogen and when decomposed (distilled) by heat, they yield large proportions of volatile matter, much of which may be condensed as oils. The latter differ in composition and qualities according to the methods, temperatures, etc., of distillation, and, according to the process, it is probable that they will be made essentially to constitute artificial petroleum. Generally, and by ordinary, simple, dry distillation they are asphaltic but most of them will yield paraffin, and other waxes in considerable amounts, and all contain nitrogen which varies, however, very greatly in the shales from different regions and formations.

Oil shales, in deposits of considerable thickness and extent, are found in different parts of the United States, but generally the thick deposits yield but few gallons per ton, while the rich deposits, including the low-grade cannel coals, are extremely limited in extent. Enormous amounts, in many strata of great thickness and relatively large area, are found bedded like coal in the Green River (Eocene) formation of northwestern Colorado, northeastern Utah, and southwestern Wyoming, and in a formation probably Miocene in age in northern Nevada.⁶

⁶ Winchester, D. E., "Oil Shale in Northwestern Colorado and Adjacent Areas," *United States Geological Survey Bulletin*, 641, pp. 139-198, 1917.

Experimental tests show that some of the purer beds of oil shale yield over 70 gallons per ton and certain parts of some of the beds are claimed to yield over two barrels per ton. D. E. Winchester, who has mapped many of the deposits for the United States Geological Survey, reports that in northwestern Colorado and northeastern Utah there is enough of this shale in beds three feet or more in thickness, and capable of yielding 22 gallons⁷ or more of oil to the ton by distillation, to provide as much as 40 billion barrels of oil from which five billion barrels or more of gasoline should be extracted. Larger proportions of gasoline should be produced by the employment of proper methods. If the deposits of southwestern Wyoming and the small areas of rich shale in Nevada be added, the roughly estimated production mentioned above may be enormously increased—possibly doubled. Deposits of oil shale of limited extent, and generally less rich, are present in a number of states, namely, Pennsylvania, Indiana, Kentucky, Texas, Wisconsin, Michigan and West Virginia.

What new oil fields may yet be discovered in other parts of the world, particularly the less explored regions,

Winchester, D. E., "Oil Shale of the Uinta Basin, Northeastern Utah, and Results of Dry Distillation of Miscellaneous Shale Samples," *United States Geological Survey Bulletin*, 691, pp. 27-55, 1919.

Condit, D. D., "Oil Shale in Western Montana, Southeastern Idaho, and Adjacent Parts of Wyoming and Utah," *United States Geological Survey Bulletin*, 711, pp. 15-40, 1919.

Ashley, G. H., "Oil Resources of Black Shales of the Eastern United States," *United States Geological Survey Bulletin*, 641, pp. 311-324.

⁷The average production of the Scotch oil shale distilled in recent years is stated to approximate 22 gallons per ton.

no one can foretell, but it seems probable not only that oil will be distilled from the shales of the Green River group long after the principal oil fields of the world have been exhausted, but also that the total amount that may be obtained from this source may approach the world's total production of natural petroleum. The fact that some of the rich deposits of phosphate in the Permian of Idaho and southwestern Montana are accompanied by shales, which on distillation yield small amounts of oil,³ suggests an interesting problem for the consideration of the chemical engineer.

How soon oil may be produced in this country by the distillation of oil shale on an industrial scale at a commercial profit, and how rapid the production may grow remains to be demonstrated. Over 40 companies are said to have been honestly organized for the production of shale oil in Colorado and Utah, and many companies have been formed for the sale of stock. The shale oil industry of this country is now in an experimental stage. A number of plants are already constructed or are building to try out different processes and conditions. Foremost among the elements to be determined are the best methods of retorting with reference to the recovery of the most valuable products, refining methods adapted to the particular shales in hand, and the possible by-products and their relative importance. Other questions to be considered concern water supplies and transportation problems; the establishment of great plants; the build-

ing of towns, and the housing, feeding, etc., of a great industrial population numbering hundreds of thousands of men. The development of a great shale oil industry is certain eventually to take place in this country, and, so far as concerns mere costs of production, it would seem that the recent advances in oil prices must bring it near to hand. Nevertheless, in view of the technological problems to be solved experimentally, it appears rather likely that shale oil will be sorely needed long before it is produced in amounts sufficient to bring appreciable relief, and much longer still before it can supply a large part of a consumption demand even no greater than that of the present day.

In view of this grave probability, the passage of the experimental stage, with its losses and waste of none too well guided capital, should be hastened by the establishment of testing plants and research laboratories by the government and by wise and foresighted investigation and tests on the part of the stronger oil companies. It is absolutely a matter of insurance of the public and country.

Oil shale industries have enjoyed a long existence in Scotland, France, and Australia, and oil from Scotch shales helped the British Navy to victory. However, it is an interesting circumstance, reflecting possibly changed conditions, that just now, when we are driven to greater efforts to establish a shale-oil industry in this country, the work of the Scotch plants, formerly running on shales of low oil yield, but of unusually valuable by-products, is being transferred to the refining of oils brought from British oil fields in the east, the labor costs being too high for

³ Condit, D. D., "Oil Shale in Western Montana, Southeastern Idaho, and Adjacent Parts of Wyoming and Utah," *United States Geological Survey Bulletin*, 711, pp. 15-40, 1919.

the profitable utilization of the shale in competition with oil more cheaply produced in increasing volumes from the wells of Egypt, Persia and India.

The use of oil shale is a means of relief of qualified adequacy, the benefit of which can at best be realized but slowly and laboriously. Our oil shales are an endowment of inestimable value on which we are certain, ultimately, to depend heavily, though the time and rate of that dependence will be largely controlled by the rate of development of foreign oil fields, the growth of the world demand, and by consequent competitive prices of natural oil.

Dangerous Growth of Consumption Demands

The increase, both present and prospective, in the consumption demands for petroleum in the United States is hardly less alarming than our growing dependency on foreign petroleum supplies, for if in recent years the United States has furnished very close to 66 per cent of the world's whole output of petroleum, our oil industry is reported nevertheless to have at the same time demanded more than we produce, this demand having amounted to over 80 per cent of the world's output in 1919. To the extent of nearly 47,000,000 barrels the United States is already living beyond her income.

The gap between the oil production and consumption curves, illustrated in figure 1, has not been eliminated even in the past year of inadequate automotive production and post-war readjustment; thus, while in 1919 our domestic oil production was forced to an increase of nearly 25 million barrels (7 per cent), our net importations of foreign oil—i.e., the excess of imports over

exports of crude—gained 14 million barrels (43 per cent). The oil requirements of the petroleum industry in the United States during the last year (1919) were, according to the preliminary returns, compiled by G. B. Richardson, of the United States Geological Survey, approximately 418,400,000 barrels, not including oil used on the leases, or probably nearly 421,000,000 in all.

It is stated that of about eight million motor cars, in round numbers, in the world, over 7,600,000 are in this country, which has been estimated to contain over 90 per cent of all the internal combustion engines. It is calculated also that the number of motor cars will ultimately exceed 12 million, if it is not restricted by fuel prices. Moreover, we are told in this connection that the orders in the hands of some of the large motor manufacturers are a year or more in arrears, and that internal combustion engines in vast numbers are to be made for tractors, airplane transportation services, launches, pumps, farm machinery and small power purposes throughout the country. On every hand new uses for oil are being devised and old applications multiplied. Not even the recent increase in prices of gasoline and other by-products can be seen to have caused a perceptible slackening in the rate of increase of consumption or to have curtailed plans for the more widespread and varied use of petroleum.

Not the least of the important consequences of the coal strike of last autumn has been the public apprehension of still higher coal prices, on account of which arrangements have been made or are making for the substitution of fuel oil for coal on railroads,

on ships, in shops, power houses, and even in heating plants, thus adding more millions, the sum of which cannot yet be counted, to the drain on our available oil resources. Further advances in the prices of coal cannot fail further to increase these consumption demands unless scarcity of oil from any source acts automatically as a check. The use of oil under steam boilers at an efficiency of 10 to 15 per cent in the generation of steam, when its use in the Diesel engine would give an efficiency of 25 to 30 per cent, is a criminal waste for even the present generation may well be called to account.

Between 1909 and 1918 the production of crude petroleum in the United States increased 95 per cent (see Figure 1), but the production of gasoline, as compiled by the United States Bureau of Mines, increased from around 13 million barrels to 85 million barrels, or 560 per cent, in the same period, while the number of automobiles and trucks increased 1700 per cent. The consumption of fuel oil by vessels engaged in foreign trade in 1919 was nearly double that of 1918. These examples illustrate the rapidity with which our industries, our commerce, and our standards of living have become dependent on petroleum, the third in value of our great mineral products.

Dependence of United States on Foreign Oil

As already noted, the production⁹ of petroleum from the oil fields in the United States during 1919, according to the preliminary statement by G. B. Richardson, of the United States Geological Survey, was 377,719,000 barrels,

⁹ Exclusive of oil consumed on leases and of producers' stocks except in California.

of which 371,579,000 barrels were delivered to refineries and other consumers in this country, leaving about 6,140,000 barrels which were added to stocks held by pipe-line, and other marketing companies. The increase of production was 6.12 per cent, while the increase in wells drilled¹⁰ was 14 per cent. However, any sense of security predicated on the addition of the small amount mentioned above to the domestic oil in storage fades away when it is recognized that the oil now in storage in the United States is not enough to supply this country for four months. For several months oil has been drawn out from storage, the draught for January, 1920, being 700,000 barrels. On the other hand, the importation of crude oil into the United States from other countries (predominantly from Mexico) has increased from 37,735,641 million barrels in 1918 to 52,746,567 barrels in 1919, or 40 per cent. Deducting for approximately 5,925,587 barrels of crude oil exported to other countries, the net excess of our imports over our exports of crude oil for the year 1919 amounted to 46,820,980 barrels, as compared to 32,834,950 barrels in 1918. The significant facts are not only the large total amount of foreign oil necessary to meet our requirements, but also the amount (14 million barrels) of the increase for the year. In short, our demand for foreign oil has increased over 42 per cent during 1919, notwithstanding the temporary handicaps of both commerce and industry. Reports received for January, 1920, show a net importation for that month of 5,865,293 barrels, a rate of 52 per cent increase over 1919.

¹⁰ *Oil and Gas Journal*, Tulsa, Oklahoma, January 23, 1920.

The reports of the Bureau of Foreign and Domestic Commerce¹¹ show that during the fiscal year¹² ending June 30, 1919, the total oil exports of the United States, including both crude and refined oils, such as fuel, gas, illuminating and lubricating oils, gasoline, light distillation products and residuum, altogether amounting to approximately 60,215,831 barrels, were about five million barrels, or 8 per cent less than during the preceding fiscal year. But for this falling off in our exportation of refining products due, in part, to post-war difficulties of industrial and financial readjustment in Europe, the actual increase in our importations must have been very nearly, if not quite as great as, the increase gained at great labor and cost, in our domestic production, and this in the face of increased prices for crude oil and oil products.

The program of the United States Shipping Board is reported to provide for an aggregate of 1,734 oil-burning merchant ships by 1922. To drive this merchant marine the board has called for 50 million barrels of fuel oil for the year 1920, and 30 million barrels for the first half of 1921. At this rate it may be anticipated that the fuel oil requirements for the last half of 1921 will be near or over 40 million barrels, and that the fleet, when completed, will require an annual supply of between 70 and 90 million barrels. This merchant marine supply, which is approximately equivalent to one-half of all the fuel oil now produced in the United States, constitutes a new burden superimposed on an already over-

loaded demand, and in its entirety or its equivalent must be drawn from foreign sources. If the requirements of our growing navy be added, the demands for oil for sea use will probably approximate 100 million barrels of fuel oil per year. The people of the United States will doubtless curtail their use to assure oil for the navy, but whether they will willingly go without oil at home on account of pride in the merchant marine, and in order that the ships under our flag may have ample supplies of oil as cheap as those obtained by rival ships in all parts of the world, seems extremely doubtful. It is interesting to note that our oil companies, including those operating in Mexico and Central America, are at present (March, 1920) dilatory in making contracts with the Shipping Board for more than a small part of the oil needed by our ships in 1920.

A British oil economist calculates¹³ that by 1925 the petroleum requirements of the United States will exceed 500 million barrels and that at a later date America will become more and more dependent upon British supplies. Another high authority, W. C. Teagle, president of the Standard Oil Company of New Jersey, estimates¹⁴ that in 1925 the requirements of the petroleum industry in this country will approximate 650 million barrels, an increase of more than 220 million barrels over the requirements of 1919. Unless conservation of oil through curtailment of use—for example, as fuel burned under steam boilers to generate steam—is forced automatically by scarcity

¹¹ *Commerce Reports*, No. 39, February 16, 1920, p. 932.

¹² All other figures in this paper are for calendar years.

¹³ *Oil and Gas Journal*, Tulsa, Oklahoma, November 20, 1920.

¹⁴ *Oil Trade and Drug Reporter*, New York, February 2, 1920, p. 15.

of oil and consequent prohibitive prices, or is sooner and more wisely brought about artificially by regulation, it seems probable to the writer that the demands of our oil industry will considerably exceed 600 million barrels, or possibly 650 million, as estimated by Mr. Teagle in 1925, though by that time our exportation of refined oils to some of the foreign markets will probably be reduced by competition of foreign oils nearer at hand and more cheaply produced.¹⁵

A drain of over one-half billion barrels, even if the annual demand be not further increased, would, if taken from the oil fields of the United States, probably exhaust the oil resources remaining available in the ground in fourteen years, or in sixteen years, if we assume that our recoverable oil possibly amounts to so much as eight billion barrels, which to the writer seems very improbable. It is fortunate for the country that the oil cannot so rapidly be extracted. On the other hand, it also seems to the writer quite improbable that an annual production of natural petroleum amounting to so much as 450 barrels can be won in any year from our domestic oil fields, the peak of whose production is likely to be passed by 1925.

On the whole, therefore, we must expect that, unless our consumption is checked, we shall by 1925 be dependent on foreign oil fields to the extent of 150,000,000 barrels and possibly as much as 200,000,000 of crude each year, except in so far as the situation may by that time, perhaps, be

helped to a slight extent by shale oil. Add to this probability the other greater probability that within five years—perhaps three years only—our domestic production will begin to fall off with increasing rapidity, due to the exhaustion of our reserves, and it becomes evident that, except for such relief as may come from shale oil production, America's future in oil will yearly become more and more completely dependent on supplies to be brought from foreign fields. This we cannot evade and must prepare for.

FOREIGN OIL RESOURCES

Estimates of Recoverable Oil in Other Countries

No estimate really worthy of the name can yet be made of the oil resources of the world. The best that can be offered is a scientific guess carefully formulated on the basis of the data now available and necessarily subject to an enormous coefficient of error. Of the important producing oil regions in other countries, only Roumania, Galicia, and the Baku and Grosny districts of Russia are so far developed as to offer criteria comparable to those of the United States for the estimation of their oil reserves. In none of the producing or prospective oil regions of other countries in which are located the great oil fields of the rest of the world have the geologic data been published, and in particular have the stratigraphy and structure been so far described by specialists in the geology of oil fields, as are the producing and prospective fields of the United States.

In many of the other countries, of which Mexico is an illustration, the detailed geological examinations, pos-

¹⁵ However, the use of petroleum products in countries where they are now used to a slight extent or not at all is likely, on the whole, to greatly expand the market and strengthen it.

sibly accompanied by tests by the drill, have been confined to restricted areas, with but reconnaissance or even more indefinite data as to the remaining regions, which, on account of scattered surface indications or other criteria are believed to be oil bearing to an important degree. In some regions we have only the evidence of oil and gas seeps and pitch or asphalt deposits scattered in greater or less abundance over great areas, in which general geologic conditions, similar in essential characters to those of producing districts, are reported to prevail. In other regions, of which the near East, including Mesopotamia and Persia, offers the most striking example, a tremendous potential value is predicated with reasonable safety on the character, relative abundance, and wide-spread distribution of well-recognized surface indications of the presence of petroleum, though geological details are meager, and actual oil production—the latter in great abundance—is essentially restricted to comparatively few areas, the wells being mostly confined to a small area of testing in the upper part of the Karun River basin.

In countries like the Philippine Islands, Madagascar and Australia, the indications leave no doubt as to the presence of potential oil fields of some importance, but the geological information and developmental results where tests have been made are quite insufficient to permit an estimate deserving confidence as to the relative consequence of their oil resources.* In portions of many of the countries it is possible only to base deductions as to probable oil contents upon analogies drawn after careful study of the data as to surface conditions and geologic

relations, and a comparison of these with those of other regions in which exploitation has demonstrated the extent of the oil deposits. Hence, while the oil resources of Roumania, Galicia and the Baku district, and a number of the older but relatively insignificant areas of western Europe, such as the Italian and Alsatian fields and the field in northwest Germany, can be roughly estimated, with a range of probable error in some cases as close as in the estimates of the oil in the United States, the reliability of the forecasts of the oil contents of the remaining regions ranges all the way to carefully made and conservative guesses, based on whatever information is in hand, with due consideration of the kind as well as the amount of the fundamental data. Unfortunately, some of the most important prospective oil regions of the world fall into the latter category. On account of this fact, any estimates made by any geologist of the oil resources of the world are likely to differ from those made by any other geologist, are subject to revision from time to time as more adequate information accumulates, and must not be given a weight of authority which they do not deserve.

The general distribution of the principal petroleum reserves of the world, so far as they are demonstrated by development supplemented by favorable geological data and reported surface indications of oil, has been somewhat diagrammatically represented by Mr. Eugene Stebinger, chief of the Foreign Mineral Section in the United States Geological Survey on a map here shown as Plate I. The circles, drawn in different sizes to indicate the relative importance of the estimated oil reserves of the different

regions, are centered near the centers of the actually productive or prospective oil fields, though the geographic distribution of the oil indications, as in Argentina for example, may extend through great stretches of country. No attempt is made to show all regions in which oil indications are reported, but concerning which the evidence in hand is not sufficient to prove them to be important.

To avoid the appearance of unwarranted exactness and finality, Mr. Stebinger tentatively represents his somewhat generalized conclusions as to the amounts of the oil reserves in each area by graphs in which the oil is shown in terms of relative importance or quantity, rather than in terms of barrels or metric tons. It will be noted that for a number of areas, like Bolivia, Northern Argentina and China, where little or no boring has been done at promising localities, the relative importance of the oil resources is shown by unshaded circles in contrast with shaded ones for the fields with settled production.

In the following table are given Mr. Stebinger's estimates for the regions represented by the circles on his map as grouped according to political boundaries or to natural petroleum provinces which transgress national boundaries. This table expresses, first, the relative values of these groups as compared with unit value for the United States, and, second, the corresponding quantities when unit value for the United States is seven billion barrels, the moderately liberal estimate for the petroleum of the United States. Totals are also given separately for the eastern and western hemispheres and for areas north of the equator and south of the

equator. In submitting these estimates which, through his courtesy, are here published for the first time, Mr. Stebinger calls attention to the fact that these totals suggest a surprisingly evenly balanced distribution of oil between the eastern and western hemispheres, and, as with the distribution of the world's coal reserves, a great preponderance of tonnage north of the equator.

OIL RESOURCES OF THE REGIONS REPRESENTED
BY CIRCLES ON THE WORLD MAP, PLATE I,
AS ESTIMATED BY EUGENE STEBINGER, OF
THE UNITED STATES GEOLOGICAL SURVEY

Country or Region	Relative Value	Millions of Barrels
United States and Alaska.....	1.00	7,000
Canada.....	.14	995
Mexico.....	.65	4,525
Northern South America incl. Peru.....	.82	5,730
Southern South America, incl. Bolivia....	.51	3,550
Algeria and Egypt....	.13	925
Persia and Mesopotamia.....	.83	5,820
S. E. Russia, S. W. Siberia and the region of the Caucasus.....	.83	5,830
Roumania, Galicia and western Europe.....	.16	1,135
Northern Russia and Saghalien.....	.13	925
Japan and Formosa....	.18	1,235
China.....	.20	1,375
India.....	.14	995
East Indies.....	.43	3,015
Total.....	6.15	43,055
Total eastern hemisphere.....	3.03	21,255
Total western hemisphere.....	3.12	21,800
Total north of equator..	5.20	36,400
Total south of equator..	.95	6,655

As indicated in the preceding table, the natural petroleum resources of those regions of the world, for which the relative amounts are tentatively indicated by circles of different magni-

tudes on the map, are estimated at approximately 43 billions of barrels. Far as it may be from the exact amount, this total is to be regarded as conservative not only because it represents the cautious judgment of a well-trained and experienced oil and gas geologist based on the best information available at the present time, but also for the reason that the value assigned to the oil fields of the United States is conservative. It is to be expected, and it is certain that the appraisals of the different regions roughly indicated on the map will undergo radical changes as development proceeds and geological exploration is carried on in greater detail and with special reference to oil possibilities, and it is, of course, possible that the reserves may in some instances have been overestimated; but it is highly probable, on the other hand, that in many of the less civilized and geologically less known regions, the actual reserves may prove to be much, perhaps many times greater, than has been tentatively estimated.

It is to be noted that (1) no value is given on the map or in the above table for the oil resources of the regions marked by squares; (2) oil indications are known in regions not indicated on the map by any symbol, although in most such instances the geologic conditions seem to preclude reserves of great importance; and (3) finally, there are in other countries many untested regions in which the geological conditions appear to be favorable for the occurrence of oil fields, though surface indications of oil have not yet been reported, possibly due in part to insufficient exploration. In this connection it will be remembered that in

many oil fields in the United States the oil deposits are not indicated at the surface by such features as oil or gas springs, tar or asphalt deposits, etc.

It is highly probable that oil in considerable amounts will eventually be discovered in areas of northwest Canada, where only a limited commercial production has so far been obtained. Other foreign areas in North America which seem likely to make contributions, possibly of minor importance, to the world's supply, include Central America, Santo Domingo, and Lower California. In South America important new centers of production seem probable along a very extensive stretch of territory bordering the east slopes of the Andes, and, in addition, the gently flexed Paleozoic and Mesozoic areas of northeastern Brazil would seem to be possibly oil bearing. Madagascar offers much promise; and conditions favorable for developing oil fields appear to be present not only in Angola and other regions of west Africa, but possibly in east Africa also, while it is more than probable that the northern part of this great continent will finally reveal stores of oil more widespread and far greater in amount than is indicated on the map. Australia, Tasmania and New Zealand may yet disclose producing areas of value and it seems reasonable to expect new discoveries of importance in parts of India not indicated by circles. Arabia, Palestine, Armenia and Anatolia all offer thoroughly circumstantial indications.¹⁶ Also it seems rather probable that oil will be produced in portions of Spain, Austria and other countries of western Europe

¹⁶ See Schweer, Walther, *Die türkische-persischen Erdölvorkommen*, Abh. Hamburg. Kolonieninstituts, Vol. 40, 1919.

where, as until recently in Great Britain, its presence may have gone unsuspected. The relatively unaltered Carboniferous and Devonian basins of Russia are practically certain not merely to disclose new areas of production, but also to furnish extensive supplies of oil probably rich in lubricants, while Siberia, about which geological information is so greatly desired, and which is said to carry indications of oil deposits in Trans-Caspia, Turkistan, Kamchatka, and notably in northern Saghalien, may reasonably be expected to contain oil bearing areas in other regions of its Tertiary, Mesozoic and Paleozoic formations. China, in which kerosene is reported to be selling now at \$1.40 per gallon, has oil indications in four at least of her provinces. It appears probable that oil is present in Tertiary and Mesozoic basins, scattered from Persia and Transcaspia eastward as far, at least, as Gobi. Finally, the results of slight testing at a few points and the evidence of numerous oil seeps in a number of the Philippine Islands, as recently summarized by Warren D. Smith,¹⁷ make fairly certain the presence of commercial oil deposits in these islands, which should be examined and fully tested by the United States, for, on account of their geographical positions with reference to world commerce, the oil deposits of these Islands may be found to be of particular value to the navy and merchant ships of this country.

The evidence as to the probable presence of additional oil reserves in the areas just reviewed is in most cases in-

sufficient to serve as a basis for more than the wildest forecast. However, these forecasts, or geological guesses, formulated conservatively with the probability that deficiencies will be very much more than compensated by excesses, lead me to conclude that there are probably 20 billion barrels of oil available in the world in addition to the 43 billion barrels contained in the regions covered by Mr. Stebinger's estimates quoted above, or as much in round numbers, as 60 billions of barrels in all. Mr. Stebinger's estimate of the oil in the regions indicated by circles may be roughly distinguished as oil in sight; that of 60 billions as total recoverable oil. This estimate of the world's total recoverable petroleum resources, in which Mr. Stebinger concurs, may differ very widely from estimates by other geologists, but we regard it as fairly conservative. It will, we believe, fall considerably within the ultimate recovery of natural petroleum now remaining in the world's underground storage.

Strongly in contrast with the oil reserves (oil in sight) of the principal known regions as indicated on the map, Plate I, is the relative rate of annual draft on these fields to supply the world's uses, which in Plate II is shown in blocks definite in scale and based on the production records. A glance of comparison at these maps shows cause for alarm that can only increase when the situation is considered more in detail.

The production of oil in the United States during 1919 approximated 378 million barrels, while our consumption requirements called for the addition of 47 million barrels of foreign oil in excess of the amount of crude petroleum

¹⁷ Smith, Warren Du Pré, *Petroleum in the Philippines*, Transactions American Institute of Mining and Metallurgical Engineers, Advance Publication, February, 1920.

exported by us to other countries, the total net requirements of the American oil industry for the year being over 418 million barrels. It has been noted also that, barring financial disaster or further oil shortage and consequent prices markedly restrictive of consumption, the annual petroleum requirements of

at the present rate, to the last barrel.

Contrast this situation and its disheartening prospect with the situation of the rest of the world. A review of the accompanying table of world petroleum production, compiled by G. B. Richardson of the United States Geological Survey, shows that

WORLD'S PRODUCTION OF CRUDE PETROLEUM IN 1918 AND SINCE 1857, BY COUNTRIES
Compiled by G. B. Richardson, United States Geological Survey

Country	Production, 1918			Total Production, 1857-1918		
	Barrels of 42 Gallons	Metric Tons	Per Cent of Total	Barrels of 42 Gallons	Metric Tons	Per Cent of total
United States.....	355,927,716	47,457,029	69.15	4,608,571,719	614,476,230	61.42
Mexico.....	63,828,327	9,506,289	12.40	285,182,489	42,564,549	3.80
Russia.....	40,456,182	5,520,066	7.86	1,873,039,199	247,856,218	24.96
Dutch East Indies ^a	13,284,936	1,836,914	2.58	188,388,513	25,465,114	2.51
Roumania.....	8,730,235	1,214,219	1.70	151,408,411	21,058,193	2.02
India.....	^b 8,000,000	1,066,667	1.55	106,162,365	14,154,982	1.41
Persia.....	7,200,000	^b 1,000,000	1.40	14,056,063	2,952,231	.19
Galicia.....	5,591,620	777,640	1.09	154,051,273	21,424,303	2.05
Peru.....	^c 2,536,102	338,147	.49	24,414,387	3,253,251	.33
Japan and Formosa.....	2,449,069	326,543	.48	38,498,247	5,133,100	.51
Trinidad.....	2,082,068	289,578	.40	7,432,391	1,033,712	.10
Egypt.....	2,079,750	277,300	.40	4,848,436	646,458	.07
Argentina.....	1,321,315	192,612	.26	4,296,093	617,176	.06
Germany.....	711,260	^b 100,000	.14	16,664,121	2,254,974	.22
Canada.....	304,741	40,632	.06	24,425,770	3,256,769	.33
Venezuela.....	190,080	26,400	.04	317,823	44,142	.02
Italy.....	35,953	^b 5,000		973,671	138,588	
Cuba.....				19,167	2,662	
Other countries.....				397,000	53,139	
	514,729,354	69,975,036	100.00	7,503,147,138	1,006,389,791	100.00

^a Includes British Borneo.

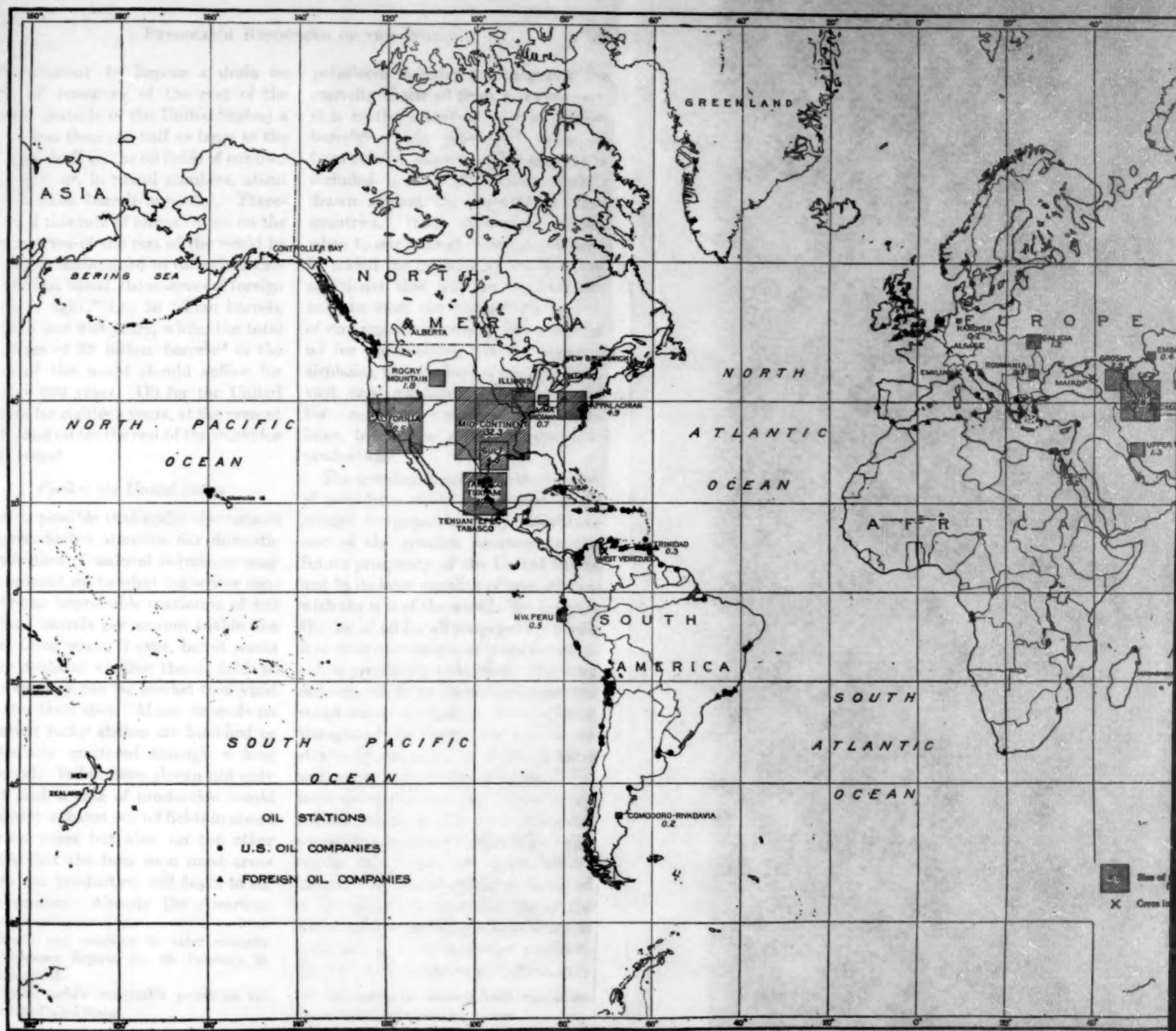
^b Estimated.

^c Estimated in part.

the United States are likely, by 1925, to exceed 600 million barrels. It has also been pointed out that our domestic production which may not go over 425 million barrels a year—and is not likely ever to exceed 450 millions of barrels—would exhaust the estimated seven billion barrels of natural petroleum remaining available in the ground in the United States in eighteen years if the reserves could be drained continuously,

over 60 per cent of the oil produced in the world since 1857 has been drawn from the stores of the United States, and that in 1918, 69 per cent of the world's oil supply came from our reserves. The collective consumption requirements of all countries outside of the United States¹⁸ appear at the pres-

¹⁸ The net importation of petroleum by the United States may here be regarded as nearly balanced by the exports of refined oils, fuel oils,



MAP OF THE WORLD SHOWING PRODUCTION OF PETROLEUM FOR 1919

PREPARED BY THE U. S. GEOLOGICAL SURVEY

1919

Compiled by Eugene Stebinger

ent moment to impose a drain on the oil resources of the rest of the world (outside of the United States) a little less than one-half as large as the annual draft on the oil fields of our own country, or, in round numbers, about 180 million barrels annually. Therefore, if this rate of annual drain on the oil reserves of the rest of the world be similarly maintained to the exhaustion of the last barrel, the reserves of foreign "oil in sight," i.e., 36 billion barrels, should last 200 years, while, the total reserves of 53 billion barrels¹⁹ in the rest of the world should suffice for nearly 300 years. Oil for the United States for eighteen years, at the present rate, and oil for the rest of the world for 300 years!

Peril of the United States

It is possible that under the current unprecedented stimulus our domestic production of natural petroleum may be brought up to what the writer considers an improbable maximum of 450 million barrels per annum within the next three years, if ever, but it seems very doubtful whether the oil fields of this country can be goaded to a yield greater than that. Much depends on whether lucky strikes are bunched or irregularly scattered through a long interval. It has been shown not only that such a rate of production would probably exhaust our oil fields in about sixteen years but also, on the other hand, that the turn soon must come when our production will begin to sag and decline. Already the American

petroleum industry has outgrown the capacity of our oil fields and even now it is to the extent of over 50 million barrels²⁰ yearly dependent upon oil from foreign sources. This amount is included in the 180 million barrels drawn against the deposits of other countries. What then shall we do, when to our present overdraught must be added the millions by the hundred additional that will be required not only to meet the prospective growth of our rapidly increasing demands for oil for automobiles, trucks, tractors, airplanes, more railways, power plants, vast new machinery, the navy and the merchant marine, but also, later, to replace a waning domestic production?

The growing American consumption of petroleum, which at present seems almost irrepressible, may constitute one of the greatest menaces to the future prosperity of the United States and to its later equality of competition with the rest of the world. In America the use of oil for all purposes for which it is more convenient, or more economical, is practically unbridled. We have not only made its higher uses raise the standards of civilization, but, without thought of the future, we have unrestrainedly degraded it to its grossest and most wasteful employment. We have developed the most extravagant habits, which in time are becoming necessities, until our oil industries now require over 80 per cent of the world's output. With one-eighth as much oil in the ground as has the rest of the world, we are calling for four times as much as all other countries together. The total oil resources of Galicia esti-

lubricants and residuum to other countries. See *Commerce Reports*, No. 39, February 16, 1920, page 932.

¹⁹ Total world's recoverable petroleum less that of the United States.

²⁰ Net imports for January, 1920, were at the rate of 70,383,000 barrels per annum.

mated by a European engineer at 47,000,000 tons²¹ would not meet the requirements of the United States for a single year. If all available oil in the world be 60 billion barrels, as above estimated, and this were to be reserved for the exclusive use of the United States, it would satisfy our 1919 rate of consumption demands—not to mention the future—for but 140 years.

There is no substitute for petroleum except some other one or more mineral oils. Alcohol for use in internal combustion engines and vegetable oils for lubrication cannot be produced in the stupendous amounts required for present needs without destructively competing with foods and other vegetable products, which the public cannot and will not sacrifice on such magnitude of scale for the sake of building up foreign commerce or supplying our navy. This has in effect been proved by the history of the last ten years. On the other hand, as Mr. Requa has pointed out, the establishment of a shale oil production, capable of replacing the present output of natural petroleum in the United States, will require the organization of an industry with a labor complement practically equal to that of our present coal mining industry. Such a work, which has to be built up from the bottom, including transportation, the founding of cities and enormous operative works, cannot be accomplished in a few years; the labor strain alone would be too great. There will be no flowing wells in the shale regions; every ton represents individual labor and costs of mining, preparation and reduction. Oil shale is a bulkhead,

the distance to and efficiency of which cannot yet be clearly seen. Oil from any source, shale or other, must be as abundant and must be marketed as cheaply in the United States as oil is had in other countries if this country is not to be subjected to economic handicaps to its prosperity and progress.

The oil situation confronting the United States is genuinely critical and demands the most sober thought and wise but prompt action. It is time to call a halt and inquire whither we are drifting and where we shall end. Prevention of waste, restriction of employment and greater efficiency in recovery and in use will give great assistance, but all combined will not meet the situation nor solve the problem. The United States must either assure itself of sufficient oil for the future, or it must change its habits and cut down its use of oil. Curtailment, probably drastic, will in any event ultimately be forced to some extent, notwithstanding the production of oil from shale, and the public cannot too soon ask itself as to what extent the inefficient use of oil to generate steam in boilers is to be tolerated—not to say increased. On the other hand, the acquisition of sufficient reserves by our nationals should assure cheaper and more abundant oil, relieving the financial and industrial pressure to be endured as the compulsory dependence of the United States on an oil shale industry eventually becomes more widespread and complete. This country should not bear the industrial burden of advanced dependence on oil shale so long as there are ample stores of oil to be produced and brought more cheaply from some other quarter of the world.

²¹ Commerce Reports, No. 43, p. 1042, February 20, 1920.

IMMEDIATE ACTION FOR PROTECTION
OF THE UNITED STATES
NECESSARY

Plainly, if the United States is to have oil to satisfy its needs in the future, it must secure adequate reserves in foreign countries, buy oil from foreign oil companies, or depend on oil shale production to fill the void. To depend on oil shale is to trust to uncertainties both as to costs and as to ultimate results, and, as has been noted, is at best to superimpose on our present social and industrial fabric an enormous and complex new industry rivalling our coal mining, salvaging but a part of our present oil industry and requiring many years for its development. Sooner or later—perhaps within a year—a commercial shale oil industry may be born in this country, but that it can originate soon enough or become large enough to offer any considerable contribution before our domestic petroleum production is already on the wane seems to the writer improbable. Shale oil production cannot be made to meet any emergency demands that may meanwhile arise. Finally, if shale oil yielding the principal and indispensable petroleum products, cannot successfully be produced and marketed as cheaply as natural petroleum from other countries, the public cannot be expected to build up and sustain a shale oil industry, unless it be under subsidy as a protective measure.

As the outlook must now be viewed, it is practically certain that after a time America will be buying oil from our commercial rivals in quantities greater by far than we have ever sold to them, to say nothing of the prices paid. But, while this may be inevitable, it surely should be escaped as far as

possible. If we are to have these oils as cheaply as they are sold in the home countries; if our industries, our transportation, our navy and our standards of living are to be safeguarded in advantages as great as those of our rivals and if our merchant ships are to get their fuel oil at prices as low as those paid by rival ships, the oil supplies needed must be in the control of our own nationals, not only now but throughout. Our prosperity and our prospects, so far as they may be affected by this important and indispensable mineral commodity which influences the daily life of every citizen, must not be subject to prejudicial regulation or discriminative restriction by any foreign power, whether ally or enemy. Only by assuring control of our nationals over the oil supplies required by this country can the protection of our future be guaranteed.

When, however, attention is given to the duty of assuring the oil reserves necessary to supply America as long as any other country enjoys an equal measure of oil adequacy we find many of the great oil regions of the world closed to us by our rivals who in many other regions have secured the lion's share or are now, with an efficiency possible only under governmental aid, ceaselessly gathering in all that is good.

On Mr. Stebinger's map are indicated roughly, (1) the regions in which American oil companies either cannot acquire concessions and produce and market the oil contents, or can do so only under restrictions making it necessary to more or less completely surrender control of the organization if not of actual operations to the nationals of some other country; and (2)

those areas in which the citizens of this country may acquire concessions in accordance with essentially open-door policies. The differentiation shown on the map is tentative, possibly erroneous, and assuredly subject to revision, with, however, immediately prospective extensions of the first class.

The situation as it existed in May, 1919, is summarized in a comprehensive and informing report submitted with recommendations by Director Van H. Manning of the United States Bureau of Mines to the Secretary of the Interior, and printed in the *Congressional Record*, for July 26, 1919 (see p. 3515). According to this report the nationals of the United States are, in general, either excluded from acquiring oil concessions in the territory, colonies, and dependencies and even in lands in the spheres of influence of Great Britain (with the exception of Canada), France, Japan, and the Netherlands, or permitted to do so only under restrictions and governmental privileges of authority that constitute either effective exclusion or loss of control and management according to the case.

It appears that aliens are excluded from prospecting for oil in Burmah, India, Persia (wholly?), Uganda (probably) and the United Kingdom; and governmental policies of exclusion of other nationals from control of oil supplies obtained in Algeria, Australia, Barbadoes, British East Africa, British Guiana, France, French West Africa, Guatemala, Japan, Formosa and Saghalien, Madagascar, Mexico (?) New Guinea, and probably in South Africa. Provision for the legal or administrative exclusion of aliens from most of these countries are already effective. Such

provisions are met also in Venezuela and Uganda.

According to reports, mineral rights cannot be transferred to aliens in Australia, Barbadoes, British East Africa, British Guiana, the Dutch East Indies, France, French West Africa, Guatemala, India (probably), Madagascar, the United Kingdom, Japan (practically), Trinidad, in part, Venezuela (qualified) and, except that now held by other nationals, in Roumania and Slovachia.²² It is stated that restrictions are placed on aliens in granting oil rights or concessions temporarily in two districts of Colombia, and, conditionally, in the new territory of Roumania.

Ownership of the oil in the ground rests in the governments of Bolivia, Costa Rica, France, French West Africa, Slovachia, South Africa, Uganda, the United Kingdom, and Venezuela and, in part, in Argentina, Australia, British Guiana, Canada, Colombia, Ecuador, India and Trinidad; and movements further to vest oil rights in the state are in progress in Colombia, in Dominican Republic, Mexico, Roumania and Russia.

Whether oil lands in Mesopotamia, Palestine, the northern strip of Persia, Armenia, Arabia, Turkey and German East Africa—all marked by queries on the map, Plate I—will be open to access by our nationals after the mandates or other governmental arrangements are made for those countries remains to be seen. The present outlook does not inspire optimism.

²² Domestic oil companies may not pass under foreign control in Australia, Barbadoes, British Guiana, Burmah, the Dutch East Indies, France, French West Africa, Guatemala (?) Madagascar, Trinidad, the United Kingdom, and probably in India.

Behind the curtain of secret diplomacy the rich oil reserves of the unappropriated mandatories of the near East and of the Caucasus-Trans-Caspian regions are stakes of a great game during which more than one political boundary is likely to be adjusted to meet the oil ambitions of a prospective protector, while in portions of Latin America the stresses of commercial and political diplomacy are fully exerted to the disadvantages of our nationals. Even during the long war, oil geologists in the employ of the French, the British, and the organically allied Dutch Shell interests have been examining the most remote lands including some of the unstable countries, and in certain regions have carried on their search at the very heels of the armies. According to recent British oil news the division of the Mesopotamian oil regions between the French and British has been agreed upon, and an understanding formulated in accordance with which Great Britain and her European allies will control the oil resources of the Mediterranean region.

Government participation in oil production is found in Argentina, Australia, Bohemia, Great Britain, and probably Egypt. The British government has established a petroleum administration; owns a controlling partnership with veto powers on the board of directors in the Anglo-Persian oil company, which controls the oil resources of the greater part of Persia; gives financial assistance to its nationals engaged in oil development and is in every possible way promoting the acquisition by companies under British control or companies exclusively British, of oil reserves in all countries, including our own.

As the case now stands, our nationals are either distinctly or in effect shut out of the regions containing nearly one-half of the oil in sight in the rest of the world if the open door policy is not assured in the mandatory countries. Further, if to the petroleum resources in the countries now held by Great Britain, France and the Netherlands, there be added the concessions held by their nationals in producing or prospective oil regions of other countries, the total oil resources in the control of these nations will probably exceed three-fourths of the world's oil reserves outside of the United States. An open door policy, in the mandatory countries, at least, is an economic necessity to the United States.

Such is the prospect confronting America, whose stores have to date furnished two-thirds of the world's petroleum supplies, whose growing requirements absorb over 80 per cent of the world's present production, and whose reserves are estimated to be enough to meet her present consumption rate for less than eighteen years. The increased use of the internal combustion engine, which, incidental to the great awakening following the war is already noticeable in the hitherto less progressive or even barbaric countries of the world, cannot fail to cause a great growth in the foreign demand for oil which when once under way, will gain great momentum, thus bringing augmenting pressure from all sides in the world's competition for oil. In fact, it probably is no rash prediction to forecast a world's shortage of petroleum within the next twenty years, with the likelihood that the world's supplies will be insufficient within fifteen years.

Most earnest warnings of the im-

pending danger have been issued by Director George Otis Smith,²³ of the United States Geological Survey; Director Manning²⁴ of the United States Bureau of Mines; Franklin K. Lane,²⁵ Secretary of the Interior, and M. L. Requa, director of the petroleum division of the late Fuel Administration. A joint memorandum by Directors Manning and Smith, and Mr. Requa will be found in the congressional record above cited.

The situation as viewed from our rival's standpoint is analyzed with unusual perspective by E. Mackay Edgar in *Sperling's Journal* for September, 1919, from which the following extracts are quoted as wholesome and profitable food for American thought:

The time . . . is coming, is, indeed, well in sight, when the United States, partly through recklessly improvident exploitation and partly through natural processes of exhaustion, will be nearing the end of some of the available stocks of raw materials on which her industrial supremacy has been largely built. . . . The processes which have practically stripped Ireland of trees are operative in the United States over a far wider territory, on a yet more appalling scale, and in connection with many other sources of national wealth. The size and magnificence of the American inheritance and the rapidity and wantonness with which it has been squandered are an almost incredible commentary on human

folly. On no country, perhaps, had "affluent Fortune emptied all her horn" in such varied and bountiful profusion, and no country could have shown itself more utterly ungrateful. The Americans have dealt with their resources, and deal with them today, in the pioneer spirit of sheer, unmitigated pillage. . . .

America has recklessly and in sixty years run through a legacy, that, properly conserved, should have lasted her for at least a century and a half. . . . But the effects of fifty years of negligence and inefficiency are now becoming visible. Just when Americans have become accustomed to use twenty times as much oil per head as is used in Great Britain; just when invention has indefinitely expanded the need for oil in industry; just when it has grown to be as common and as true a saying that "oil is King" as it was twenty years ago that steel was king; just when the point has been reached where oil controls money instead of money controlling oil—the United States finds her chief source of domestic supply beginning to dry up and a time approaching when instead of ruling the oil market of the world she will have to compete with other countries for her share of the crude product. . . .

America is running through her stores of domestic oil and is obliged to look abroad for future reserves and . . . these reserves, constituting a key position in international industry, are very largely in British hands or controlled by British capital. Before very long America will have to come to us for the petroleum she needs. . . .

The main sources of the world's supply of oil in the near future will have to be looked for outside of America. . . .

If Americans have failed to develop oil fields of their own in other lands, they will become more and more dependent upon foreign sources for the supply of one of the first necessities of twentieth century industry. Therefore, like the far-sighted men they are, they are diligently scouring the world for new oil fields—only to find, almost wherever they turn, that British enterprise has been before them and that the control of all the most promising properties is in British hands. . . .

When the industry revives in Russia and Roumania, in both of which countries the affiliated Royal Dutch companies were by far the largest producers, and when the Mexican wells are free to expand to their maximum capacity, the Shell

²³ Smith, George Otis, "A Foreign Oil Supply For the United States," *Transactions American Institute of Mining and Metallurgical Engineers*, February, 1920. Advance publication No. 157.

Smith, George Otis, "Where the World Gets Its Oil," *National Geographic Magazine*, February, 1920, pp. 181-202.

²⁴ Manning, Van H., "International Aspects of the Petroleum Industry," *Transactions American Institute of Mining and Metallurgical Engineers*, February, 1920. Advance publication No. 158.

²⁵ Lane, Franklin K., Annual Report of the Secretary of the Interior for the Fiscal Year June 30, 1919, p. 13. (Republished as *United States Geological Survey Bulletin* 705.)

group will be in control of not far short of a fourth of the world's supply. . . . The Shell group owns exclusive or controlling interests in every important oil field in the world—in the United States, Russia, Mexico, the Dutch East Indies, Roumania, Egypt, Venezuela, Trinidad, India (where, in conjunction with the Burmah Oil Company, it dominates the local position), Ceylon, the Malay States, North and South China, Siam, the Straits Settlements, and the Philippines. In the past few years it has been a particularly heavy investor in American Oil properties. . . .

Our true policy, therefore, while vigilantly proving and working such resources as we possess, is to encourage investment of British capital in oil, enterprises abroad, and especially in such parts of the world as are readily accessible to seapower, and to see to it by appropriate legislation that the companies so formed remain in perpetuity under British control. In one conspicuous instance, that of the Anglo-Persian Company, the government has itself acquired a majority interest in the ordinary shares; and as the company has the exclusive right to exploit for a period of sixty years from 1901 the whole of the petroleum deposits in the Persian Empire, with the exception of the five northern provinces, and as the proved territory is now definitely known to be one of extraordinary richness—the wells already sunk have a potential production of 5,000,000 tons a year—one may take it for granted that the British hold will not be relaxed. . . .

With the exception of Mexico, and, to a lesser extent, Central America, the outer world is securely barricaded against an American invasion in force. There may be small isolated sallies, but there can never be a massed attack. The British position is impregnable. All the known oil fields, all the likely or probable oil fields, outside of the United States itself, are in British hands or under British management or control, or financed by British capital. We shall have to wait a few years yet before the full advantages of the situation begin to be reaped. But that the harvest will eventually be a great one can be no matter of doubt. To the tune of many million pounds a year America before very long will have to purchase from British companies, and to pay for in dollar currency, a progressively increasing proportion of the oil she cannot do without and is no longer able to furnish from her own stores. . . .

We hold in our hands, then, the secure control

of the future of the world's oil supply. We are sitting tight on what must soon become the lion's share of a raw material indispensable to every manufacturing country, intimately bound up with maritime power, and unobtainable in sufficient quantities outside of the spheres of British influence. It will be within the limits of the commanding position that the future has in store for us to hold up the entire world to ransom in the distribution and the price of this vital essential.

After making liberal deductions for patriotic vanity and bombast on the part of the British economist who, nevertheless, adduces unpleasant circumstantial data, the case as he presents it finds support to an alarming extent in the evidence already cited.

For the information of the reader, and for comparison with the estimates and forecasts by Mr. Stebinger and myself, the following is quoted from an editorial in the *Financial News* (London) of February 24, 1920:

At the commencement of the war we believed that the effective British share of the oil resources of the world was about 2 per cent. Careful admiralty calculations recently made have shown that it is now about 56 per cent. This figure includes the Persian and Burmah resources, but takes no account of the vast South American fields commanded by the British Controlled Oilfields. The exact amount of their contribution cannot, at the moment, be estimated with anything like precision. Probably a modest estimate might put it at another 19 per cent. If that be so, our present command of the world's oil resources runs to no less than 75 per cent of their entirety.

As Secretary Lane has urgently declared, in connection with his forceful recommendations to the President and Congress,²⁸ "the situation calls for a policy prompt, determined, and looking many years ahead." This situation cannot be neglected. Longer to ignore it is to court disaster. The smug complacency that habitually blinds the

²⁸ Annual Report of the Secretary of the Interior for the year ending 1919, p. 18.

American public must be torn aside and the truth in its reality of danger faced squarely, courageously, justly, and wisely. An unprecedented crisis in our country may call for action without precedent. It is the business of the American oil companies and of

the government, working both separately and in such effective coöperation as will insure a successful outcome, to see to it that the future oil supply of America is guaranteed as fully as that of any other nation.

Have Wages Kept Pace with the Cost of Living?

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IN attempting an answer to this question it is necessary, at the outset, to examine the terms used and the general form of the inquiry. Let us take up in order, therefore, three points of definition: "Wages," "Cost of Living," and the *period* during which it is proposed to compare the movements of the two factors.

THE MEANING OF WAGES AND THE COST OF LIVING

Wage Rates and Actual Earnings

First, with regard to wages: It is quite evident that higher wages paid in a sufficiently depreciated currency might leave the recipient poorer than before. It is nearly as obvious that high money wages in an era of high prices may confer only an illusory prosperity upon the wage earner. Here is the real point of this inquiry. We wish to ascertain whether *real* wages have been rising or falling, for in a time like the present it is unlikely that they could have remained wholly stationary. For any period during which the prices of the items for which the worker expends his income have risen more than has his money wage, we must conclude that real wages have fallen. Conversely, for any period during which the wages of the worker have risen more than has the cost of his customary budget, for such a period there has clearly been an increase in real wages.

Another phase of the definition of wages should be noticed. It concerns

the distinction between the wage rate and actual earnings. The former is stated in terms of cents per hour, dollars per week or month, or dollars or cents per unit of work performed; the pay envelope, however, contains a sum of money, the amount of which depends in part upon considerations other than the wage rate. If a machinist earned 50 cents an hour, assuming an eight hour day, and worked overtime at time and a half on week days and double time on Sundays, he might earn by working 10 hours a day, under war conditions, not merely 48 x 50 cents or \$24 a week, but, in addition, he would be paid for two hours of overtime (for which he would receive three hours pay) each week day. This would amount to 18 hours a week; if he worked 10 hours on Sunday also, he would be paid for 20 hours' work. His overtime and Sunday work would, therefore, net him 38 hours at 50¢, or \$19, in addition to the \$24 earned during regular time. His pay envelope would thus contain \$43 for a week's work.

Suppose now, that the machinist's "pay," *i.e.*, his rate, receives a rather extreme increase of 50 per cent, which advances him to 75 cents an hour, and, at the same time, the shop in which he is employed returns to its former 48-hour week. He will now find that his pay envelope contains \$36 (48 x 75 cents). This is 16 per cent less than he had been receiving. Thus, a 50 per cent increase in the wage *rate*, coupled

with a shortening of the work-day and the cutting out of the Sunday earnings, leaves him not richer in point of income, but poorer by about one-sixth.

Not only variations in the length of the working day, but also all sorts of interruptions of the worker's efforts affect his actual earnings. Sickness of the worker, or sickness in his family, lack of employment, the temporary breakdown of machinery, strikes, shortage of materials, and other causes beyond the control of the individual worker reduce earnings considerably in certain circumstances. For example, the fuel administrator's closing order in January, 1918, clipped 5 per cent from the average weekly earnings of the factory workers of New York State for that month, while in November of the same year the closing of factories on Armistice Day reduced the average weekly earnings during November between 3 per cent and 4 per cent.¹ Wage rates, therefore, considered apart from earnings, give us only an incomplete idea of the situation of the wage earner. It is equally true that earnings also present an imperfect picture in some respects. The report of the National Industrial Conference Board on *Wartime Changes in Wages* points out that "weekly earnings are less reliable in showing wage trend than are hourly earnings, since the latter are less likely to be affected by such factors as labor turnover, absenteeism and overtime."² This is true, if by "wage trend" we understand the movement up or down of the *rates* at which labor is remunerated. During periods when the

number of hours in the normal working day remain constant, the movement of rates affords a fair indication of the condition of the workers, provided the fluctuations in the amount of employment, due to other causes, are of such a sort as to cancel one another. But it is significant that a permanent shortening of the normal working week has accompanied the recent rise of prices. "The eight-hour movement has made rapid gains during the past four years," and "in the last three years the general observance of the Saturday half-holiday has reduced the 48-hour week to 44 hours."³ All comparisons, therefore, between the hourly rates of 1913 or 1914 and those of the present time must take account of a probable shortening of the working week, which operates to discount the increase in the actual weekly earnings by as much, in some occupations, as 15 per cent.

Cost of Living

Another term requires a word of explanation. The cost of living cannot be satisfactorily ascertained by a comparison of index numbers derived from the wholesale prices of commodities in general. The workman does not buy at wholesale, and he buys a particular assortment of consumers' goods and services. Let us consider for a moment the so-called family budget. The adult workman whether American or foreign-born is prospectively, if not actually, the main support of an average family, and competes in the labor market with other heads of families. Hence, it has become customary to consider

¹ See *Labor Market Bulletin* (N. Y. State Industrial Commission), December, 1919, p. 6.

² *Supra*, p. 108.

³ See *Monthly Labor Review*, November, 1919, pp. 194-95.

the wages of adult male workers from the point of view of their adequacy to support an average family consisting of wife and three children of school age. What such a family group requires, in order to live in simple comfort under American conditions, is in process of definition at the present time, and while conditions and customs vary somewhat from section to section, standards of an American standard of living are in the way of working out to a reasonably harmonious conclusion. At this point it is necessary simply to indicate the relation which exists between price movements and fluctuations in the cost of living.

Increased Prices and Family Budgets

In order to compare the cost of a given family budget at two different periods, it is necessary to use either (1) a standard list of actual goods and services which, on the average, an American family of five will require, or (2) the percentages of income which workmen ordinarily expend for the several classes of necessities entering into a family budget. In case a standardized list is available, as in the valuable study published in October, 1919, by William C. Beyer and his assistants for the Bureau of Municipal Research of Philadelphia,⁴ all that is necessary at different dates, or in different localities, is to fill in the current costs of the items enumerated, to make the comparisons, and to draw conclusions as to changes in the cost of living. As a matter of fact, most of the studies of the cost of living fail to give us completely detailed speci-

cations regarding the expenditures of families at any level of comfort. They do tell us, however, the *proportion of income* which is expended for food, for clothing, for rent, for fuel and light, and for other major items. On the basis of such percentages it is possible to revise cost of living estimates, and bring them down to date. The following table⁵ indicates the way in which increased prices affect the cost of a family budget:

ESTIMATED PER CENT OF INCREASE IN COST OF LIVING IN THE UNITED STATES FROM 1913 TO OCTOBER, 1919

Items of Expenditure	Per Cent of Total Expenditure	Average Per Cent of Increase in Prices from 1913 to October, 1919	Per Cent of Increase as Applied to Family Budget
Food	38.2	80.70	30.8
Clothing	16.6	139.30	23.1
Housing	13.4	17.75	2.4
Fuel and light	5.3	45.07	2.4
Furniture and furnishings	5.1	139.62	7.1
Miscellaneous	21.3	81.31	17.3
Total	100		83.1

Translated arbitrarily into dollars, this table tells us that in a \$1,000 family budget, an estimated sum of \$382 will go for food; and, since food prices have risen 80.7 per cent this item will now cost \$308 additional. Clothing in such a budget will cost \$231 more than in 1913; rent, \$24; fuel and light, \$24, etc. Added together, these necessary additions to the cost of living total \$831. In other words, the skilled wage earner who

⁴ *Workingmen's Standard of Living in Philadelphia*, Macmillan and Co., 1919.

⁵ See "Changes in Cost of Living in the United States, 1913, to October, 1919," in *Monthly Labor Review*, January, 1920, pp. 97-98.

formerly supported his family on \$1,000 (a wage of say \$3.33 a day) will now require \$1,831 if he is to provide them with as good a living as in 1913. This is equal to a new wage of \$6.10 a day, which on this showing appears to be the 1919 equivalent of a 1913 wage of \$3.33, assuming in both cases a working year of 300 days. Similarly the smaller budget of a less skilled worker, which might have been \$600 in 1913, would (assuming for the moment the approximate accuracy of these percentages) need to be increased to \$1,098 in 1919, in order to cover the same quantity and quality of items. Such are a few of the general considerations connected with the terms *wages* and the *cost of living*.

There remains the problem of the period during which it is proposed to institute comparisons between the movements of these two factors. The recent and rapid phase of these movements began about the second half of 1915, but it is preferable to compare the last year of world peace, 1913, with the present, so far as it is possible to do so. The changes from 1913 to 1915 are so slight that the differing dates used in various investigations within this period do not create serious difficulties.

A point, sometimes overlooked, concerns the movement of prices and of wages during the decade and a half preceding the war. It will be recalled that the prices of the period of the Spanish-American War (the closing years of the last century) had been left behind long before the beginning of the recent sharper increases. Some attention, therefore, should be paid to this longer period stretching back to the end of the nineties.

POSITION OF THE WAGE EARNER IN 1913

A number of careful studies published about the beginning of the war appear to agree in the general conclusion that during the opening decade and a half of the present century, the actual purchasing power of American wages had been declining. Lauck and Sydenstricker⁶ conclude that full-time weekly wages increased, on the average, between 25 and 30 per cent during the period from 1900 to 1915, but the cost of maintaining a family in 1913 without change of standard was 35 per cent greater than in 1900. W. I. King,⁷ writing of the effect of continued heavy immigration upon real wages during the decade 1900 to 1910, expresses the following view: "The evidence, then, indicates that all the entrenchments of organized labor, all the legislation in favor of the working class, all of our new inventions have failed to prevent the invaders from forcing down the commodity wages of American labor." In another passage we read: "From 1865 to 1896, the general trend of real wages was very steadily toward higher levels, except for temporary backsets. After 1896, the progress upward ceased and, since 1906, there are some suspicious indications of a general decline. The important feature is that the ascent has been checked, and that, right in the face of the greatest industrial development that the world has ever seen."⁸ Streightoff,⁹ also, calls

⁶ Lauck and Sydenstricker, *Conditions of Labor in American Industries*, 1917, pp. 378 ff.

⁷ King, W. I., *The Wealth and Income of the People of the United States*, 1915, p. 179.

⁸ *Supra*, p. 193.

⁹ *The Standard of Living Among the Industrial People of America*, 1911, p. 48.

attention to the fact that the "retail prices of food are advancing so rapidly that, for the last decade, there has been no gain in the real wages of persons employed in manufacture." The reference is to the ten years ending in 1907.

H. P. Fairchild in a study entitled *The Standard of Living—Up or Down?*¹⁰ is apparently in accord with the authors already cited: "The writer is well aware that the foregoing data do not prove that the common laborer's family was better off in 1890 than in 1908. . . . But he does believe that they furnish very strong evidence in support of that proposition." I. M. Rubinow,¹¹ writing in 1914, goes even farther: After an exhaustive examination of the wage and retail price data of the Department of Labor, he arrives at the conclusion that between 1890 and 1912, real wages ("purchasing power measured by retail prices of food"), on the basis of weekly earnings, fell in the ratio of 99.4 to 85.3, the average of 1890-99 being rated 100. Retail food prices constitute only one of the items in a family budget, yet inasmuch as it is the largest single item, namely, about 40 per cent of the total, these results have a certain amount of significance. His conclusions are in general agreement with those of other writers cited above. He finds that "in years of falling or even slowly rising prices, the American wage worker was able to hold his own or to improve his condition to a slight extent. But when confronted with a rapidly rising price movement . . . the

American wage worker . . . has been losing surely and not even slowly, so that the sum total of economic progress of this country for the last quarter of a century appears to be a loss of from 10 to 15 per cent in his earning power."¹² He contends further that a positive drop in the standard of living has been prevented only by "(1) smaller families, (2) rapid development of woman labor, (3) increase in employment of married women." Parmelee¹³ agrees with this conclusion which he says "may seem startling and hard to believe, yet it is corroborated by the results of other investigations of the same question."

If we consider only the years of the present century, therefore, we are probably justified in concluding that the American worker found himself, at the outbreak of the World War, handicapped by a slight but unmistakable decline in the purchasing power of his wages. They sufficed to buy somewhat less than had the wages of the year 1900.

EXTENT OF THE RECENT INCREASE IN THE COST OF LIVING

Reference has already been made to the estimate of the Bureau of Labor Statistics concerning the percentage increase in the cost of a weighted list of items comprising a family budget. It will be recalled that the increase from 1913 to October, 1919, figured out at 83.1 per cent. All of these items, however, except the food prices, were derived from wholesale price index numbers¹⁴ and are in so far

¹⁰ *American Economic Review*, 1916, pp. 9-25.

¹¹ "The Recent Trend of Real Wages," in *The American Economic Review*, December, 1914, p. 793.

¹² *Ibid.*, p. 813.

¹³ *Poverty and Social Progress*, 1916, p. 363.

¹⁴ See *Monthly Labor Review*, January, 1920, p. 97.

unsatisfactory, yet, on the whole, it is probable that this calculation presents a substantially accurate picture of recent changes. It does not differ greatly from certain other estimates with which comparison is possible. Thus the estimate of the National Industrial Conference Board¹⁵ of 73 per cent is for a slightly shorter period, July, 1914, to July, 1919; it has been pointed out, moreover, that "the study made by the National Industrial Conference Board was carefully done, but, with the exception of food prices, most of the prices and rent data were gathered solely by correspondence with clothing stores, real estate dealers, etc., and it is believed that any error resulting from this method of collecting data would be on the side of unduly conservative quotations."¹⁶

Cost of Living in Washington, D. C.

Several local studies of much value should be noted in this connection. The cost of living in the District of Columbia has been made the subject of an investigation by the United States Bureau of Labor Statistics,¹⁷ which led to the conclusion that from 1913 to November, 1919, the percentage of increase was 88.4 per cent. This is a study based upon the percentage of income paid out for the several items of expenditure, and apparently involved the collection, locally, of retail prices for these items, although the account is not entirely specific upon this point. Rent increased in the District only 3.4 per

cent during the entire period, so that this item cannot be held accountable for the high total increase found. No doubt, conditions in the capital city are unrepresentative in other respects, due to the relatively high average income of the white population of the city.

Cost of Living in Philadelphia

The investigation of the cost of living undertaken in Philadelphia, under the auspices of the Bureau of Municipal Research, throws some light upon the rising cost of the family budget. The authors of this report conclude that a budget which had cost in Philadelphia \$1,069.94 in 1913-14 could be purchased in the autumn of 1918 for \$1,751.¹⁸ This is the equivalent of a 64 per cent increase, and runs fairly close to the estimates of the Bureau of Labor Statistics for the same period. For from July, 1914, until June, 1918, the latter's figures show an increase of 56 per cent, and from July, 1914, until December, 1918, an increase of 72 per cent.¹⁹ The Philadelphia increase up to the "autumn" of 1918 is midway between the Bureau of Labor Statistics estimates for June and for December of that year.

Cost of Living in Peoria, Ill.

Another local investigation of much interest is that of the Holt Manufacturing Company of Peoria, Ill. This was carried out as a preliminary to a general revision of wage rates, in

¹⁵ *Research Report*, Number 19, "Changes in the Cost of Living," p. 25.

¹⁶ Hanna, Hugh S., in the *Monthly Labor Review*, October, 1919.

¹⁷ See *Monthly Labor Review*, January, 1919, pp. 98-99.

¹⁸ *Workingmen's Standard of Living in Philadelphia*, a Report by the Bureau of Municipal Research of Philadelphia, William C. Beyer, in charge, 1919, p. 7.

¹⁹ Hanna, Hugh S., in the *Monthly Labor Review*, October, 1919, p. 8.

accordance with the increased cost of living. The method employed in this study and the results obtained are described by Messrs. Williams and Holt under the title "The Cost of Living in Relation to Wage Adjustments" in the *Bulletin of the Taylor Society* for October, 1919. The prices of foods, clothing, fuel, shelter, etc., were ascertained from local retail dealers under conditions of personal knowledge on the part of the investigators who thus kept close to their facts; this should ensure a high degree of accuracy in the results obtained. In summarizing the cost of living phase of the investigation, the authors find as follows: "Combining the four principal essentials of cost of living, that is, food, clothing, fuel and shelter, we found the total daily cost of living for the years 1913, 1915, 1917, 1918 and 1919. The result was that the same articles, used in the same quantities by the standard family of five throughout those years, could be purchased in 1913 for \$4.06, whereas in May, 1919, those same articles would cost \$7.39, an increase of 81.6 per cent in daily living cost from the base year, 1913, to May, 1919."

This result has the advantage of being derived wholly from carefully weighted *retail* prices, not only for the several food items, but for all the items entering into its composition. It has also the advantage of being based upon data obtained on the ground, rather than by the less satisfactory method of questionnaires sent by correspondence to dealers in distant localities. It was worked out, moreover, in close collaboration with the consumers—employees of the company—whose assistance was invoked

as needed by the investigators. From May, 1919, to October, 1919, retail food prices in the United States increased about 1.6 per cent; it is probable, therefore, that if this study were brought down to October, 1919 (the date of the Bureau of Labor Statistics index number of 83.1 mentioned above), it would be necessary to increase very slightly the Peoria index number. It chances that as the two index numbers stand, there is a difference of only 1.5 points between them. In spite of the fact that the Peoria index number is a purely local one, it is believed that it is not too unrepresentative of the country generally. The increase in rentals, an item differing from city to city as much as any of the constituents in a family budget, amounted to 24.3 per cent in Peoria. Assuming that housing costs 13.4 per cent of the total expenditure, as explained above, we would have an increase in the cost of the Peoria budget attributable to rent of 3.25 per cent. The increase due to housing in the Bureau of Labor index number was 2.4 per cent. The correction, therefore, for exceptional housing conditions in Peoria would appear to be less than 1 per cent.

In view of the foregoing considerations, it would appear that 83 per cent is not an excessive estimate for the increased cost of living between the year 1913 and the late autumn of 1919. Since then, the cost of the 22 articles in the Bureau of Labor Statistics retail price list has increased from the index number 188 for October, 1919, to 201, for January, 1920, or 7 per cent.²⁰ During the past six years

²⁰ Press releases, U. S. Bureau of Labor Statistics.

the aggregate percentage increase in the cost of food at retail has about equalled the percentage increase in the cost of the budget generally. It is not improbable, therefore, that the 7 per cent increase in the retail price of food between October last and January of this year reflected an increase in the cost of living, generally, of about that amount.

EXTENT OF THE RECENT RISE IN WAGES

As stated above, wage statistics consist partly of wage rates and partly of actual earnings. There is available a certain amount of material of both sorts. In comparison with the cost of living data, that bearing upon wages is complicated in the extreme due to the extraordinary differences in the extent to which workers in the several industries and in the various occupations within these industries have received increased wages. Hanna and Lauck in January, 1918,²¹ pointed out many of these discrepancies. The following items will illustrate this point; they are taken from a table setting forth relative wages in leading occupations, December, 1917, over 1914-15, rates for 1914-15 being 100:

Compositors and Linotype operators (newspapers, day).....	106
Hodcarriers (plaster tending).....	112
Mining (anthracite).....	118
Silk industry (earnings).....	140
Common labor (iron and steel).....	160
Woolen manufacturing (earnings).....	170
Blacksmiths (Ship Yards, Delaware River).....	205

The war, it is evident, brought increased pay to labor in greatly differing degrees. The fact of this uneven-

²¹ *Wages and the War*. See especially pages 3-11; the figures quoted above are taken from page 6.

ness from calling to calling makes generalizations about wage increases take on a certain aspect of unreality, for, while the "average worker" may have had his pay raised, say 80 per cent for the sake of illustration, the millions of concrete individuals behind the shadowy average have received either more or less, perhaps very much more or very much less, of an increase.

This uneven participation in rising wages is apparent even as among entire industries, as the following index numbers for eight leading industries clearly reveal.²²

RELATIVE EARNINGS PER HOUR IN SPECIFIED INDUSTRIES INDEX NUMBERS FOR SPRING, 1919; 1913 = 100

Hosiery and underwear.....	184
Silk goods.....	191
Clothing, men's.....	171
Lumber (sawmills only).....	194
Mill work (sash, doors, etc.).....	151
Furniture.....	154
Cigars.....	152
Iron and steel.....	221

The bureau states that the cost of living index number most nearly comparable with these wage index numbers is 175; this being the case, it will be noted that four of these industries show wage increases greater than that in the cost of living, while four show increases smaller than that in the cost of living. These figures tell us nothing about weekly or annual earnings.

Computed on the same basis (1913 = 100) the wages of farm labor had already in 1918, reached points ranging from 155 to 178, according to which of several different methods of hiring were employed.²³ This corresponds

²² See *Monthly Labor Review*, November, 1919, p. 191-93, and January, 1920, pp. 140-41.

²³ *Monthly Labor Review*, November, 1919, pp. 193-94.

roughly to the advance registered by the cost of living up to that time, which reached an index number of 158 in June, 1918, and 174 in December of the same year.²⁴ Data for 1919, unfortunately, are not yet available. Railway wages also appear to be keeping up with the higher costs; from the year ending June 30, 1915, to July, 1919, the average hourly compensation of the numerous classifications of railway labor which are paid by the day increased 97 per cent. We are told, however, that owing to the introduction of the eight-hour day, the railroad employe did not receive an actual increase in his earnings such as this percentage of increase in rates would indicate.²⁵ The wage rates of anthracite miners, on the other hand, appear to have risen but 50 per cent between 1913 and 1919, while the rates of bituminous pick miners in the basing district of the central competitive field, rose but 35 per cent, during the same period when the cost of living increased about 77 per cent.²⁶ Probably the most complete and most useful collection of authoritative wage statistics bearing upon the period of the war is that published by the Bureau of Applied Economics, at Washington, entitled *Wages in Various Industries—A Summary of Wage Movements During the War*. The following data relative to union rates in the building trades are taken from this source (page 13):

PER CENT INCREASE OF HOURLY RATES IN
VARIOUS CITIES, 1914-19

Bricklayers.....	30.9
Carpenters.....	53.9

²⁴ Supra, November, 1919, pp. 193.

²⁵ Supra, December, 1919, pp. 229-30.

²⁶ Supra, December, 1919, pp. 225-26.

Cement workers and finishers.....	36.3
Inside wiremen.....	51.4
Painters.....	60.8
Plasterers.....	32.2
Plumbers.....	50.0
Sheet metal workers.....	56.2
Steam fitters.....	51.6
Structural iron workers.....	51.7

The increase in the cost of living during this period was a little over 70 per cent.

A very valuable study of *Wartime Changes in Wages* is that prepared by the National Industrial Conference Board. Not only relative hourly but also weekly earnings are given for eight leading industries. The figures are for a single weekly payroll period only in each year, but comprise establishments employing in the neighborhood of 150,000 workers. The weeks selected were generally the third week in September for the years 1914 to 1918, and the first week in March, 1919.²⁷ Assuming the weekly earnings in September, 1914, to be 100, those of March, 1919, were found to be as follows for male workers only:

Metal manufacturing industries.....	188
Cotton manufacturing industry.....	171
Wool manufacturing industry.....	162
Silk manufacturing industry.....	193
Boot and shoe industry.....	176
Paper manufacturing industry.....	176
Rubber manufacturing industry.....	210
Chemical manufacturing industry.....	204

(The index numbers for hourly earnings differ from the above figures materially; they average about 10 points higher.)

The cost of living index which the report regards as comparable with these wage figures, namely, the board's index number for March, 1919, was

²⁷ National Industrial Conference Board, *Research Report Number 20*, p. 1.

161.3.²⁸ The index number of the Bureau of Labor Statistics, for this date, however, based on September, 1914, would be 172.²⁹ Therefore, in March, 1919, weekly earnings in these establishments were, in most cases, abreast or well in advance of the cost of living. In general, these figures present a somewhat more favorable picture of the wage earner's position than do those of the Bureau of Labor Statistics for October, 1919, referred to above.

Another series of relative wages can be computed from the payroll data gathered by the Bureau of Labor Statistics, and published under the title *Employment in Selected Industries*. Thus, by dividing the total payroll disbursement in a given industry on a certain date by the total number of workers employed at that date, it is possible to arrive at a sort of average of earnings, which can be compared in one year with the corresponding item in a later year. In the plants comprised in the list below there were employed in October, 1915, some 429,000 persons, and in April, 1919, although the establishments reporting were not wholly identical, there were 453,000 persons. Taking the average earnings calculated in this way for October, 1915, as 100, the relative earnings in April, 1919, were as follows:³⁰

Cigar manufacturing.....	149
Hosiery and underwear.....	152
Silk.....	153
Boots and shoes.....	156
Cotton finishing.....	169

²⁸ *Supra*, pp. 100-101.

²⁹ See *Monthly Labor Review*, November, 1919, p. 193.

³⁰ See *Monthly Labor Review*, December, 1916, p. 9 and June, 1919, p. 125.

Men's ready made clothing.....	183
Car building and repairing.....	186
Cotton manufacturing.....	189
Iron and steel.....	193
Woolen industry.....	206

During the same period the cost of living reached 169, assuming October, 1915, as equal to 100. Of the ten industries, therefore, four lagged behind the cost of living, one had average earnings just abreast of it, and five exceeded it in the extent of their wage increases.

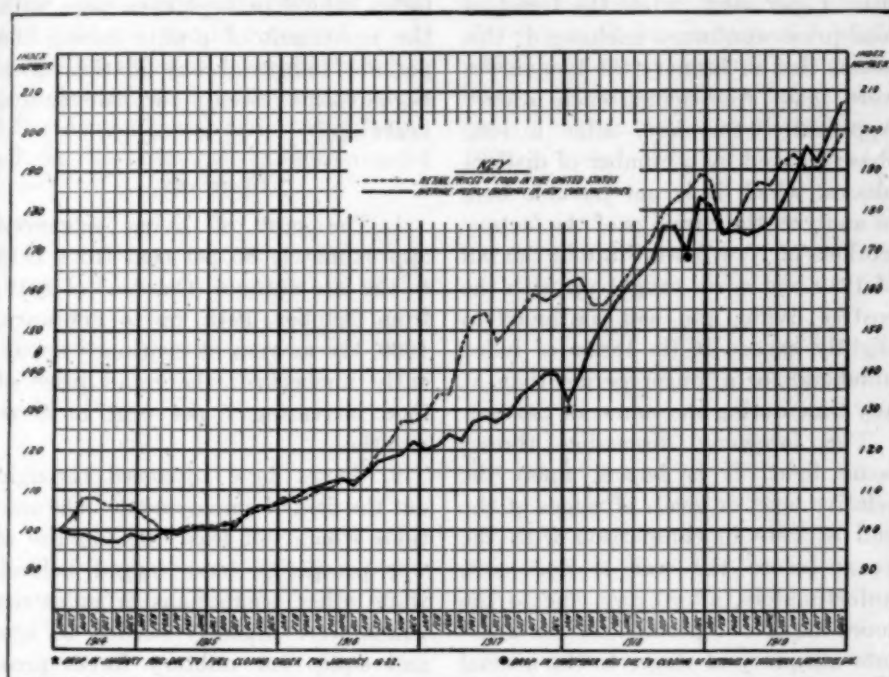
If this series of comparisons is continued to November, 1919, the last month for which figures are now available, a considerable further increase in earnings appears in all of these industries; in fact, the boot and shoe industry seems to be the only one in which earnings were not well in advance of the cost of living at the end of the stretch from October, 1915, to November, 1919.

The studies on which the last three series of relative wages are based differ at so many points, particularly as to the selection of establishments in the several industries, that no great amount of agreement is to be expected. If, however, all of the recent data thus far cited on the subject of wages were assembled in a single descriptive chart or table, this much at least would appear: the metal manufacturing industries, chemicals, rubber, lumber, and possibly railway labor have received wage increases greater than that in the cost of living; the anthracite and bituminous coal miners, on the other hand, and the millwork and furniture industries and building trades have fallen behind the movement of the cost of living, while as to the remaining industries there is, for

the most part, a lack of agreement between the several series of relative wages, and therefore more or less uncertainty as to whether they are running ahead or behind the cost of living; all of which reinforces the point that it is difficult to make that nebulous and elusive personage—the average man—stand up and speak

is the valuable table of average weekly earnings in New York State factories published in the *Labor Market Bulletin* of the New York State Industrial Commission Bureau of Statistics and Information. These figures are derived from reports received from over 1,600 firms with over 600,000 employes and represent 55 industries,

COMPARISON OF COURSE OF AVERAGE WEEKLY EARNINGS IN NEW YORK STATE FACTORIES WITH COURSE OF RETAIL FOOD PRICES IN THE UNITED STATES



clearly about his economic situation. If we should descend from industries to particular occupations we would find a similar lack of simplicity and uniformity. Let us therefore travel in the opposite direction and take a glance in conclusion at some mass data in which even industrial lines are disregarded.

The only set of figures now available which comes down to the close of 1919

arranged in 11 groups. The accompanying chart which is reproduced from page 6 of the December issue presents not only the movement of weekly earnings but also the retail prices of foods, as published by the United States Bureau of Labor Statistics.

It will be recalled that during the period when the cost of living, as represented by the weighted items of a

family budget, was increasing 83 per cent, the cost of food—the largest single item in the budget—increased 80.7 per cent. It is apparent, in these circumstances, that the curve for retail food prices possesses a considerable significance as reflecting the upward trend of living costs generally. During January, 1920, the upward movement of wages slackened, the increase for the month being less than 1 per cent, while the trend of food prices continued unchanged; this means that in January the two curves were again approaching each other.²¹ Apparently, therefore, after a long chase marked by a number of distinct phases, which it is not possible here to analyze, the earnings of the factory workers of New York State in the fall of 1919 had again caught up with the cost of living, and had continued to slightly exceed it (in terms of index numbers) for a longer period than at any time during the course of the war.

The foregoing discussion throws some light, it is hoped, upon the relative level or levels of wages at the end of 1919 in comparison with the years before the war; it does not, unfortunately, afford any clue to the more important problem of the absolute adequacy of wages to the normal requirements of the worker and his family. The problem of defining a living wage is as insistently present at the end of the war as it was at its beginning.

Closely related to this question of adequate minimum standards is the still more difficult task of determining what distributive justice requires in the matter of wage payments. To

this end there is need of a careful examination of the movement of profits during the past twenty years, running parallel with the inquiry concerning real wages. Sound conclusions on the subject of wages can be reached only after adequate answers have been made to three questions: (1) How high *are* real wages? (2) How high *should* a minimum comfort wage be? (3) Have wages exceeded, fallen behind or kept even pace with the movement of profits during the period of industrial consolidation which began some twenty or twenty-five years ago?

SUMMARY

1. The cost of living advanced approximately 83 per cent from 1913 to the late autumn (October) of 1919; from October, 1919, up to February, 1920, the movement continued apparently unchecked, the retail price of food increasing 7 per cent in three months.

2. Wages have advanced throughout the field of employment. Occupations which felt least the impulse of war prosperity have lagged behind, while other occupations or industries which were urgently needed to arm and equip our military forces prospered out of proportion to the rising cost of living.

3. The rise of wage rates has been accompanied by a permanent shortening of the working week. In consequence of this change the full-time *weekly* wage in 1920 does not exceed that of 1913 by as much as the *hourly* wage of 1920 exceeds that of 1913.

4. Between 1900 and the beginning of the World War, real wages declined slightly in the United States, with the

²¹ Press releases, New York State Industrial Commission.

result that the position of the American industrial worker was rather worse in 1914 than it had been in 1900.

5. After the outbreak of the war there was a further shrinkage in real wages, especially during 1917 and 1918 (see the New York chart). In the fall of 1919, weekly earnings overtook the retail price of food. At the beginning of 1920 real wages appear, on the average, to have risen to their 1914 level, and it is not impossible that the slight loss sustained between 1900 and 1914 will also be retrieved.

6. This result is being achieved in a period of full employment and insistent labor demand; any widespread falling off in the amount of employment

offered to labor during the continuance of present prices would necessarily result in a decline in real wages and in the standard of living.

7. In conclusion, it may be said that American labor has prospered during the past five years in a negative sense, in that, in spite of high prices, it emerged at the end of 1919 no worse off, on the average, than before; and on the positive side, labor has gained a shorter work day, fuller recognition, and in common with the rest of the population, it has inherited a world which is in many respects, *e.g.* public health, recreation, etc., a better place to live in than was that of 1890 or of 1900.

The Course of Profits During the War

By BRUCE D. MUDGETT
University of Minnesota

THE counterpart of the cost of living indexes used in so many cases during the war to settle conflicts over wages is an index of profits; for the motive behind wage demands was only in part a matter of rising price levels and rising consumer costs; it was equally a belief on the part of the wage earner that the *relative* share of capital or management in the national product was increasing, that business men and business firms were receiving vast profits from their war production. In this day of appeal to facts the only way of meeting such a belief and satisfying the demand that goes with it lies in the application of scientific methods to the measurement of the phenomenon in question.

When it comes, however, to the matter of constructing an index of profits the task is far from simple; it is by no means as satisfactory as the determination of an index number of prices, for it involves an immediate appeal to industrial accounting systems and the prerequisite to thoroughly satisfactory results is uniform accounting methods. The uniformity of our railroad accounting systems, established after a generation of legislative and administrative struggle, offers a marked contrast to accounting in other fields of privately owned and operated industry.

It is possibly a safe forecast of the near future to assume that the interest

of the public in profits will increase rather than decrease. The deep interest which the public has shown and is showing in such fundamental industries as coal production may well lead to a greater measure of public control and to a demand for more uniform methods of accounting. The changes in accounting methods by industrial concerns since the passage of the income tax law has been little short of phenomenal.

RATE OF PROFITS PROBLEM

Were it possible to obtain data, which at the present time is confidential, the problem of the rate of profits could best be studied from the income tax returns in the office of the Collector of Internal Revenue; for here, the accounting difficulties of the problem have been dealt with and a rate of profit ascertained as a basis for the imposition of the tax. It is recognized even here, however, that uniform results cannot be obtained for all business units; the valuation of assets, for instance, is fundamental to the determination of capital invested and thereby of rate of earnings; but capitalization in some cases represents no water, in some cases more or less water. The proper method of reflecting the influence of changing price levels on the valuation of assets remains an insuperable difficulty and certain it is that there is little uniformity in the methods of dealing with this problem. So after all, there is

Note—Mr. C. E. Olson and Mr. F. E. Ringham assisted materially in the preparation of the tables included in this study.

a great deal that is arbitrary in the governmental method of arriving at a rate of earnings. This arbitrariness is not removed by the power of the Federal Bureau to compel the giving of information.

While an index number of profits for all industries or for groups of related industries might therefore be constructed, it would have a large degree of untrustworthiness because of the lack of homogeneity of the data from which it was constructed. For this reason, the method of this brief study will be to construct an index number of profits for particular corporations and to make no attempt to combine them into a general industry index. By this means, it is believed, the difficulties due to lack of comparability of data will be reduced to the minimum at present possible for an individual investigator, since it will be confined to lack of comparability of the data of a particular corporation at different periods of time and will not involve comparisons between corporations.

Relation of Profits to Wages

The problem involves no judgment as to the justification of earnings, as to whether a particular level is too high or too low, but specifically the question whether over a period of time profits have changed *relatively* to wages, that is, whether they were higher or lower at one time than at another. The issue which brings this matter forward is, of course, the question whether profits have risen more rapidly than wages during the war; or, otherwise stated, whether the *relative* share of the business man or capitalist, as opposed to that of the wage earner, in the

national dividend is greater or less than in pre-war years. The data given below deals with only one side of this problem—the profits side. No attempt is made to construct wage indices or even to quote available ones but indices of profits for particular corporations are constructed and their reliability considered.

In attempting to obtain statistical evidence on this problem it is necessary at once to rule out a considerable share of the field of business enterprise; for only those business units can be studied which publish adequate accounts for the period of years covered by the study. Thus wholesale and retail business, a very important factor, must be left out; the coal companies, producing one of the fundamental necessities of our national life, must be left out, in spite of the fact that Mr. McAdoo's recent remark has made us all want to pry into the secrets of their income accounts. The railroads are omitted, of course, because they were not operated during the period of our own belligerency as private enterprises. The study is confined, therefore, to corporations which list their securities on the various stock exchanges of the country, and for that reason publish fairly complete statements of assets and income. The securities of most of the corporations selected are known to be listed on the New York Stock Exchange, although the list has not been checked to ascertain if all are so listed. The selections were made from a list of about one hundred and fifty corporations published in an investment bulletin in the writer's possession and, with the exception of "rails," includes every corporation listed concerning which

the facts as to investment and earnings could be obtained for the years 1910, or 1911 to 1918 from Poor's or Moody's Manuals. The manuals containing data for the year 1919 were not available. This test ruled out companies organized or reorganized since 1910, and a few in which the accounting methods, or at least the published accounts had changed to such an extent that the figures for various years were not comparable.

Earnings and Investments

The difficult problem in forming an index of corporation earnings is to determine what constitutes "earnings" and what constitutes "investment." Following the procedure of the Federal Internal Revenue office, the method here used has considered that the investment of the owners (stockholders) comprise that portion of the total assets which are not held as definite obligations against the stockholders. Speaking broadly, this includes the stock capital and the surplus. The management of reserves, however, has an important bearing on surplus. The "reserves" shown in balance sheets are in some cases clearly a part of the surplus representing the investment of the owners; in other cases it has been difficult to say what their nature is. Where it was clearly evident that certain reserves represented part of the equity of the owners as, for instance, "reserves for additions and betterments," they have been included in the item "invested capital."

Depreciation Reserves

There is another difficulty in dealing with reserves and that is consistency

in making proper reserve deductions. It might be hoped that in the very important matter of depreciation reserves and of ore depletion reserves in mining companies, a corporation would pursue a consistent policy over the period studied. But that this has not been the case is only too evident. Depreciation is a physical fact and operates continuously, but the general policy seems to have been to write off asset depreciation very sparingly, if at all, in lean years and very generously in years of high profit. This cannot help but introduce an element of unreliability in the figure representing investment.

Valuation of Assets

Another difficulty in determining capital invested occurs in the matter of valuing assets. This would be a most serious matter if the attempt were made to combine results for various corporations into a general profits index, and was one of the main considerations in the decision not to construct a general index. But it offers difficulties even with a single corporation. The stock capitalization of a concern may at one time be greatly watered, as was the case when the Steel Corporation was organized, whereas at a later period there may be tangible assets back of every dollar of capitalization. In one or two cases good will or patents have been given a large value in early years and later shown in the balance valued at one dollar. These considerations incline one to the belief that any index of profits may have too wide an element of error to be used with safety and to decide that the time is not yet come for a statistical determination of the

question. These difficulties, however, lie in the original data, not in the method of constructing an index, and if the index is necessary to settle problems of large public import, its use will bring forth a refinement of the data on which it is based.

The profits ratio has been determined by taking the percentage of "earnings applicable for dividends" to the invested capital. The former is not much more easily determined than the latter. "Earnings applicable for dividends" is theoretically the net income after deduction of operating expenses, fixed charges and such reserves as ore depletion, depreciation, repairs, replacements, etc. But here again these latter charges have been small or entirely absent in poor years and have been made, in some cases, in great abundance in such prosperous years as 1917. Failing to show proper depreciation reserves in the balance sheet tends to increase the book value of "invested capital" and therefore to decrease the profit per cent for that year; failure to deduct such reserves from "income available for dividends"

has the opposite effect and in far greater proportion.

In calculating the percentage of earnings to invested capital for each year these difficulties have been recognized, and they cast sufficient doubt on the yearly percentages obtained to make certain that no fine distinctions can be drawn from them. It is probable that as a general indication of the direction of profits and of the approximate changes in profit levels during the war, they are reliable.

While space limitations forbid the publication of all the data from which the yearly profit percentages of the various corporations have been calculated, the work sheet for the United States Steel Corporation is here included as an illustration of the method employed. Since the Steel Corporation produces about 50 per cent of the iron and steel output of the country, its percentages are in themselves a fairly representative index of profits in the iron and steel industry.

The calculations were made mostly on a slide rule and are probably accurate to one-tenth of one per cent.

UNITED STATES STEEL CORPORATION

Fiscal Year Ended Dec. 31	Stock Capitalization ^a	Surplus ^b	Total Invested Capital	Earnings Applicable for Dividends	Ratio Year's Earnings to Capital Invested at Beginning of Year
1909	\$868,583,600	\$130,401,396	\$998,984,996	.....	.....
1910	868,583,600	165,641,908	1,034,225,508	\$87,407,185	8.7%
1911	868,583,600	173,691,195	1,042,274,795	55,300,297	5.3%
1912	868,583,600	176,716,245	1,045,299,845	54,240,049	5.2%
1913	868,583,600	213,152,210 ^c	1,081,735,810	81,216,986	7.8%
1914	868,583,600	190,204,472	1,058,788,072	23,496,768	2.2%
1915	868,583,600	235,025,329	1,103,608,929	75,833,833	7.2%
1916	868,583,600	436,360,913	1,304,944,513	271,531,730	24.6%
1917	868,583,600	541,660,804	1,400,244,404	224,219,565	17.2%
1918	.....	.....	.....	137,532,377	9.8%

^a Does not include stocks of subsidiary companies not owned (approximately \$600,000).

^b Includes investments in property account additions and construction.

^c Includes Gary plant special construction fund, \$6,353,781.

For the purpose of obtaining summary figures for comparing pre-war and war-time profits the yearly profit percentages for the corporations included in the study were combined in the following manner: (1) a normal pre-war period; (2) the period of the entire war; the latter was then divided into two sub-periods with United States (3) as a neutral and (4) as a belligerent. The danger of using a single year as representative of normal pre-war conditions led to the decision to average the results of the four years preceding the outbreak of the European conflict. In a few cases where data were available only for the last three years preceding the war, these three years were used. All such cases have been marked in the tables. Another variation occurs in the case of corporations, the fiscal years for which end on dates other than December 31. Where the fiscal year ended on June 30, July 31, or August 31, the four pre-war years included the period from that date in 1910 to the same in 1914. In the majority of instances the pre-war period covers only to December 13, 1913. For a few cases data for 1918 were not available and period four, therefore, covers one year only; period two, in this case, covering four years.

The method of averaging the yearly percentages produces the same result, usually to one-tenth of one per cent, as the theoretically more correct method of dividing the sum of the earnings for the period by the sum of the yearly amounts of capital invested. The reason for the close correspondence in the results is due, of course, to the slight change from year to year in the denominator of the

ratio. In some dozen cases in which period ratios were calculated by both the longer and the shorter methods the results agreed within the limits stated above.

The resulting percentages of earnings for each of the four periods for each corporation are grouped together in broad industry groups as follows:

1. Steels and equipments
2. Metals
3. Motors and rubbers
4. Sugars, Leathers and Oils
5. Public utilities
6. Food products and chemicals
7. Miscellaneous

This grouping furnishes a rough indication of what might be desirable if the results were to be combined into general indices for particular industries or a single index for all industries.

SUMMARY OF CONCLUSIONS

Certain conclusions incidental to the chief purpose of this study force themselves upon one's attention. They are, in the main, that the source material for an index of profits is extremely unsatisfactory, due both to lack of uniformity in accounting methods and to the inadequate or scientifically incorrect method of dealing with reserves. The income tax law, however, has produced a very excellent effect in clarifying the balance sheets and income statements of many corporations since 1913.

The final summaries for the various corporations shown in the tables following permit certain general conclusions in support of what has been a matter of general observation. The iron and steel industry shows a very large increase in the rate of profit

STEELS AND EQUIPMENTS

	U. S. Steel	Gloss Sheffield*	Lackawanna Steel	Crucible Steel	Bethlehem Steel	Republic Iron and Steel*	Railway Steel and Spring	Pressed Steel Car	American Locomotive	New York Air Brake	Westinghouse Air Brake
Pre-war period.....	6.8	3.0	4.3	5.6 ^d	7.1	4.3	4.6	4.4	5.7	5.4 ^c	17.3 ^b
Total War period.....	12.2	6.5	14.9	15.7	32.5	12.8	8.6	6.0	8.8	23.4	24.4
U. S. Neutral period.....	11.3	4.8	10.2	14.9	41.7	10.7	5.8	4.9	8.9	31.3	21.2
U. S. Belligerent period.....	13.5	9.1	22.0	18.1 ^d	18.7	16.0	12.9	8.6	8.5	11.5 ^c	34.1 ^b

<i>Relatives</i>											
Pre-war period.....	100	100	100	100	100	100	100	100	100	100	100
Total War period.....	179	216	346	280	457	297	187	136	154	433	141
U. S. Neutral period.....	166	160	237	266	587	249	126	111	156	580	123
U. S. Belligerent period.....	198	303	511	323	263	372	280	195	149	213	197

* Fiscal years 1910-12 ended June 30; 1913 and thereafter ended December 31; pre-war period includes fiscal years 1910, 1911, 1912, 1913.

^b Fiscal year ended July 31; pre-war period therefore fiscal years end 1911 to 1914; period No. 4 (U. S. Belligerent) covers 11 months ending December 31, 1918.

* Fiscal year ends June 30; pre-war period fiscal years ending 1911 to 1914; fourth period covers fiscal year 1918 only.

^d Fiscal year ended August 31; pre-war period covers four fiscal years to August, 1914; fourth period includes only fiscal year 1918.

* Fiscal years ended November 30 till 1917.

during the war and with few exceptions a greater rate while the United States was actively involved than while we were neutral. Metals had much the same history but apparently saw their most prosperous time during our period of neutrality.

The motor and leather relatives are significant because of the unusually high levels they reached during the

war; the public utilities equally significant for the very general decreases in their profit levels.

Food products, chemicals, sugars and the miscellaneous group show fairly wide variations but in most cases very large increases.¹

¹ The comparisons of general price levels in different countries can be made by turning to the article on page 13 by Liefur Magnusson.

METALS

	Anaconda Cop- per	Colorado Fuel and Iron	Utah Copper	U. S. Smelting, Refining & Mfg.	American Smelt- ing and Refining
Pre-war period	10.4*	2.5 ^a	31.7	7.2	7.2
Total War period	18.4	5.2	44.2	9.3	9.8 ^b
U. S. Neutral period	19.9	4.8	51.1	10.7	9.4
U. S. Belligerent period	16.2	6.2 ^a	33.9	7.2	11.0 ^b

Relatives

Pre-war period	100	100	100	100	100
Total War period	177	208	139	129	136
U. S. Neutral period	191	192	161	149	131
U. S. Belligerent period	156	248	107	100	153

^a Fiscal years ended June 30, until 1918; therefore, pre-war period fiscal years ending 1911 to 1914; data for fourth period covers only calendar year 1918.

^b Total war period covers only four years; United States belligerent period covers only 1917.

* Pre-war period three years, 1911-13.

MOTORS AND RUBBERS

	General Motor Co. ^a	B. F. Goodrich Company	Studebaker Corp.	U. S. Rubber Company	Willys Overland Co.
Pre-war period	16.4	3.0 ^b	4.9	6.6 ^c	18.6 ^d
Total War period	38.0	10.4	11.6	8.5	18.0
U. S. Neutral period	42.5	9.4	15.1	6.7	25.3
U. S. Belligerent period	31.2	11.9	6.3	11.1	7.0

Relatives

Pre-war period	100	100	100	100	100
Total War period	231	333	236	129	97
U. S. Neutral period	259	313	308	101	136
U. S. Belligerent period	190	397	129	168	38

^a End of fiscal year changed in 1917 from July 31 to December 31.

^b Pre-war average based on only one year ending December 31, 1913.

^c End of fiscal year changed in 1913 from March 31 to December 31.

^d Pre-war average based on one year only, ending June 30, 1914; end of fiscal year changed in 1914 from June 30 to December 31.

SUGARS, LEATHERS AND OILS

	<i>Sugars</i> American Sugar	American Beet	Cuban American Sugar	<i>Leathers</i> American Hide and Leather Co.	Central Leather Co.	<i>Oils</i> General Asphalt Co.	Mexican Petroleum	Texas Company
Pre-war period.....	5.6 ^a	6.6 ^b	4.9 ^c	1.0	4.4	3.7	8.6 ^d	14.5
Total War period.....	7.5	12.2	19.7	5.6	10.5	2.5	9.2	23.6
U. S. Neutral period.....	6.4	14.9	24.5	5.0	10.5	2.1	7.1	24.3
U. S. Belligerent period....	9.1	8.1 ^b	11.5 ^c	7.6	10.6	3.6	12.4	21.5 ^e

Relatives. Pre-war Period = 100

	100	100	100	100	100	100	100	100
Pre-war period.....	100	100	100	100	100	100	100	100
Total War period.....	134	185	400	560	238	68	107	163
U. S. Neutral period.....	114	226	500	500	338	57	83	168
U. S. Belligerent period....	162	123	232	760	241	97	144	148

^a Three year average.^b Fiscal year ended March 31; pre-war period therefore includes four years ending March 31, 1914; fourth period includes two years ending March 31, 1919.^c Fiscal year ended September 30; pre-war period includes four years ending September 30, 1914; fourth period is for fiscal year 1918 only.^d Pre-war average based on two years ending December 31, 1913.^e Fourth period is for fiscal year 1918 only.

PUBLIC UTILITIES

	American Tele- phone and Telegraph	Brooklyn Rapid Transit	Consolidated Gas (Baltimore)	Detroit United Ry.	Laclede Gas	Peoples Gas (Chicago)	Western Union	Consolidated Gas (N. Y.)	Detroit Edison
Pre-war period.....	5.3	7.8 ^a	5.8 ^a	7.7	7.5	6.2	3.5 ^b	6.7	9.8 ^c
Total War period.....	5.2	5.9	7.0	6.9	5.5	2.6	8.0	6.1	11.3
U. S. Neutral period.....	5.3	6.3	7.0	7.8	8.2	5.5	7.5	6.6	12.6
U. S. Belligerent period.....	4.9	4.7 ^a	7.0 ^a	5.6	1.5	-1.7	8.7	5.4	9.6

Relatives. Pre-war period = 100

	100	100	100	100	100	100	100	100	100
Pre-war period.....	100	100	100	100	100	100	100	100	100
Total War period.....	98	76	121	90	73	42	228	91	115
U. S. Neutral period.....	100	81	121	101	109	89	214	98	129
U. S. Belligerent period.....	92	60	121	73	20	-27	248	81	98

^a Fiscal year ended June 30; pre-war period includes four fiscal years to June 30, 1914; fourth period includes fiscal year 1918 only.^b The end of the fiscal year changed from June 30 to December 31 in 1913. The six months from December 31 to June 30, 1913, were included in the figures for the years ending June 30, 1913, and December 31, 1913. Both were used in the average.^c Only a three year average.

- Deficit.

FOOD PRODUCTS AND CHEMICALS

	American Cotton Oil	American Drug-gist Syndicate	American Linseed	Booth Fisheries	Corn Products	International Agri. Corp.	Loose Wiles Biscuit Co.	National Biscuit Co. ^g	U. S. Industrial Alcohol	Wilson & Company
Pre-war period.....	2.9 ^a	10.0 ^b	.6 ^a	4.0 ^b	2.6 ^d	3.8 ^a	4.0 ^f	8.0	4.5 ⁱ	4.1 ^f
Total War period.....	4.2	10.6	4.5	8.0	7.2	5.0	5.3	6.7 ^h	14.3	11.6
U. S. Neutral period....	4.4	10.7	4.2	6.0	5.0	3.8	3.4	6.5	11.1	8.3
U. S. Belligerent period..	3.8 ^a	10.5	5.5 ^c	10.9	10.5	8.9 ^a	8.1	7.0 ^h	19.0	16.6

Relatives. Pre-war period = 100

Pre-war period.....	100	100	100	100	100	100	100	100	100	100
Total War period.....	145	106	425	200	277	132	132	84	318	283
U. S. Neutral period....	152	107	396	150	192	100	85	81	246	202
U. S. Belligerent period..	131	105	518	272	404	234	203	87	423	405

^a Fiscal year ended August 31; pre-war period includes four years ending August 31, 1914; fourth period is for fiscal year 1918 only.

^b Average is for two years ending December 31, 1913.

^c Fiscal year ended September 30; pre-war period includes four years ending September 30, 1914; fourth period is for fiscal year 1918 only.

^d Fiscal year changed from February 28 to December 31 in 1912; the figure on December 31, 1912, was for 10 months.

^e Fiscal year ended June 30; pre-war period 1911 to 1914; fourth period is for fiscal year 1918 only.

^f Pre-war period is for fiscal year 1913 only.

^g Fiscal year ended January 31.

^h Fiscal year changed from January 31 to December 31 in 1917. Figures for December 31, 1917, is for eleven months.

ⁱ Three year average.

MISCELLANEOUS CORPORATIONS

	General Electric	American Can	Virginia-Carolina Chemical	American Agric. Chemical	National Lead	American Woolen	Westinghouse Electric
Pre-war period.....	12.1	4.8	4.0	5.5	5.0	2.8	7.7
Total War period.....	12.9	7.8	8.8	10.2	6.9	9.4	16.4
U. S. Neutral period.....	11.0	6.7	7.3	8.9	5.4	6.2	16.8
U. S. Belligerent period....	15.2	9.4	13.2	14.2	9.2	14.1	15.8

Relatives

Pre-war period.....	100	100	100	100	100	100	100
Total War period.....	107	163	220	185	138	336	213
U. S. Neutral period.....	91	140	182	162	108	221	218
U. S. Belligerent period....	126	196	330	258	184	504	205

^a Fiscal year ended May 31; pre-war period includes four fiscal years to May 31, 1914; fourth period includes fiscal year 1918 only.

^b Fiscal year ended June 30; pre-war period includes four fiscal years to June 30, 1914; fourth period includes fiscal year 1918 only.

^c Fiscal year ends March 31; pre-war period includes four years to March 31, 1914; last period two years to March 31, 1919.

Have Profits Kept Pace With the Cost of Living?

By BASIL M. MANLY

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THE question "Have profits kept pace with the cost of living?" seems to assume that there is, and should be, some relation between profits and the cost of living. The question seems to take for granted that justice and equity require that profits should keep pace with the increased cost of living.

WAGES AND THE COST OF LIVING

There is a definite and well recognized relation between wages and the cost of living. There is general agreement among fair-minded people of all classes of society and of all kinds of economic interests, that the rate of wages should at least keep pace with the increase in the cost of living so that the standard of living of those, upon whose toil the national production depends, should be maintained. There are many indeed, particularly among the "ruling classes," who insist that there should be a rigid and unchanging relation between wages and the standard of living—that the wage earner should not be expected to improve his condition even in times of the greatest prosperity.

Social Standards for Judging Wage Rates

In fixing the rate of wages our present social and industrial standards generally assume that full justice is done to the wage earner when he is paid enough to purchase the necessities of life. Even the highest accepted standards provide that the wage earner and his family shall have only a few of the

luxuries of life and put aside some small savings for rainy days and old age. But the double economic standard of society assumes no such relation between even the most extravagant standard of living and the amount or rate of profits.

When engineers, machinists and other highly skilled workmen began to buy Fords, a large section of society at once set up a cry that economic justice had been outraged and a reduction of wages was in order. But society does not seem at all outraged by the great increase during the war of families who maintain half a dozen homes with a retinue of servants and a fleet of motor cars at each home.

There have been innumerable investigations to determine what is the minimum amount on which a laborer can support his family "in health and reasonable comfort," but no one has ever suggested a government inquisition to discover even the maximum amount which a promoter or speculator should be permitted to lavish upon the maintenance of his family in idleness and extravagant luxury.

Family Budgets of Millionaires and Wage Earners.—Our government investigations would be more effective if we were sometimes to leave the homes of the workers and go into the homes of the rich. The family budgets of our twenty-five thousand millionaires would be immensely more valuable and instructive than the budgets of any number of wage earners. The budgets

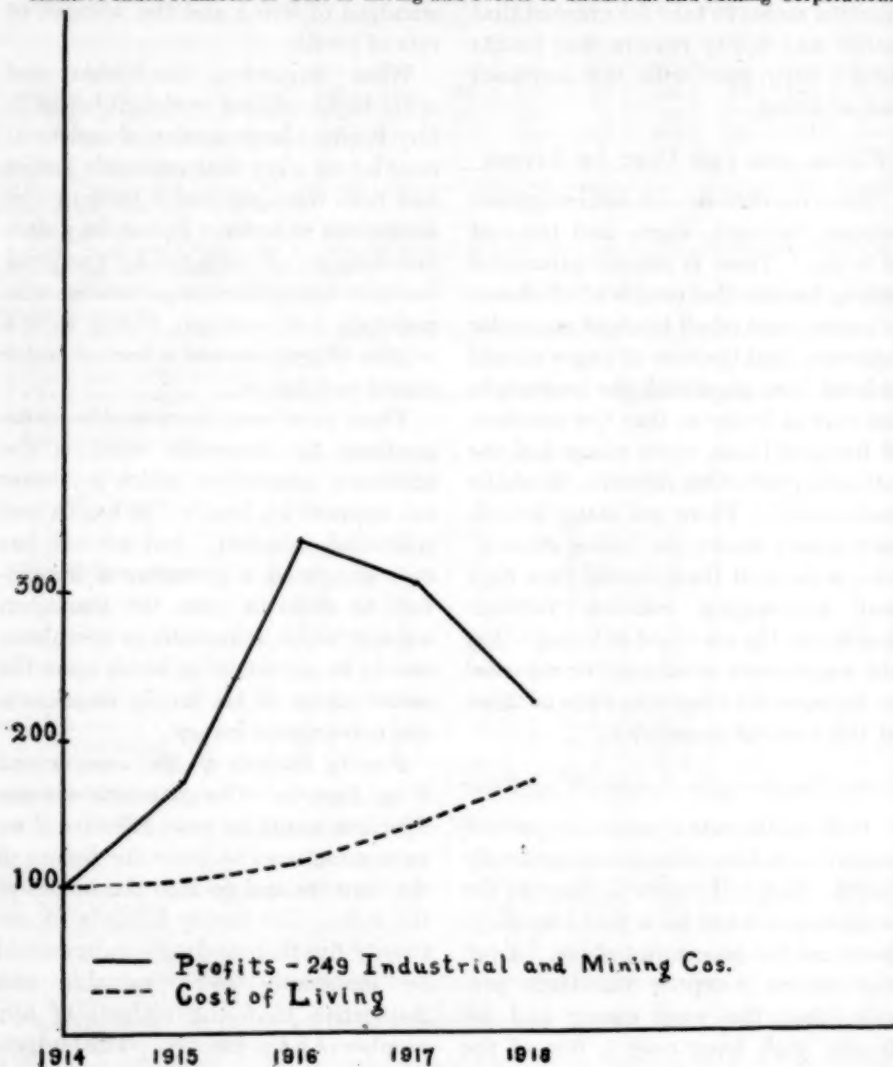
of the workers, at best, merely tell us the amount of surplus or deficit as compared with a decent standard of living. The budgets of the rich would tell us where to get the money to meet the deficits in certain classes of wage and salary earners' budgets and to provide for a hundred pressing public needs.

Wages versus Rate Arbitrations.—

There is a splendid field for such an investigation right now. The government in the railroad bill has undertaken to fix rates at a level that will yield at least $5\frac{1}{2}$ and probably 6 per cent upon the value of the roads. As the rate of interest on outstanding railroad bonds averages only $4\frac{1}{2}$ per cent, the 6 per

CHART

Relative Index Numbers of Cost of Living and Profits of Industrial and Mining Corporation.



cent rate level will provide around 8 per cent on stocks—just about twice the rate which the government pays the holders of its Liberty bonds! Surely such a generous government has the right to ask a few polite questions of its wards in finance. The financial wards, the railroad owners, will soon present to the Interstate Commerce Commission a pressing demand for a revision of freight rates to the new levels prescribed by Congress. The Interstate Commerce Commission has a list of the twenty largest stockholders of each of the roads who, together, own more than a majority of the stock. It is the custom in wage arbitrations to ask personal and sometimes impertinent questions with reference to what the wage earners are doing with the money which they already receive. Why should not the commission in considering the rate application do what the railroad arbitration board will do in considering a wage application—dispatch agents of the Department of Labor to the homes of the stock and bond holders to find out what income each is getting and how it is spent. If this inquiry should develop the fact that the majority of stockholders' families have money in the bank or are keeping a servant or an automobile, an adequate basis would exist for denying any increase in rates, according to the wage arbitration standards now insisted upon by the representatives of the railroad owners.

PROFITS AND THE COST OF LIVING

Putting aside this somewhat frivolous but perhaps suggestive line of speculation, it must be admitted that there is no relation between profits and

cost of living. Profits unlike wages are not looked at primarily as a source of subsistence by the majority of those who receive them, but rather as a means of securing increased control over industrial and economic enterprises. Even among the hundreds of thousands of small stockholders widely advertised by the corporations, profits from stock investments are usually considered quite apart from other sources of income, either as "velvet" which can be squandered in luxuries or as the basis of fortunes which they hope to build.

Profits from Bonds.—There are indeed a considerable number of persons, chiefly widows, orphans and retired business men, whose incomes are derived almost entirely from interest and dividends. With such persons there is, of course, a close relation between their cost of living and the return upon their investments. They cannot spend any more than they receive. If their investment returns are stationary in a period of rapid advance in the cost of living, their family budgets must, of course, suffer. It should, however, be noted that in this case we are dealing not with profits but with the rate of return on certain classes of securities which may be absolutely fixed, as in the case of bonds and preferred stocks, so that it bears no essential relation to corporate profits. The purchasing power of these investment returns has greatly declined, although the profits of the corporations out of which they are paid may have increased very greatly.

Profits from Public Utility Stocks

It is a striking and ironical fact that almost the only failures of investment

returns to increase as fast or faster than the cost of living during the war occurred in those lines of securities in which these capitalistic dependents, widows, orphans, and retired business men, have invested much of their capital—bonds, preferred stocks and public utility securities. Such securities were classed as "safe" investments before the war and it was there that trustees and executors delighted to invest the estates of widows and orphans. Now, the purchasing power of the fixed rate of bond interest has been cut in two while the dividends of street railway and many other public utility stocks have practically ceased.

In the field of capital, as in the field of labor, all great social changes, such as a rapid rise in prices, inevitably fall most heavily upon those least able to bear their burdens.

There has been much grumbling among railroad stockholders because earnings on railroad securities have been stationary under the standard return guaranteed by government control. They say they are receiving only the pre-war earnings while the cost of living has been constantly rising. This sounds impressive until it is remembered that the standard return is compared only with 1916 and 1917, the banner railroad years. If we go back to real pre-war conditions, as is usually done with wages, and compare the standard return with railroad earnings of 1912-13-14 and remember that the standard return is a guarantee while the pre-war railroad earnings were a gamble, it will be seen that there is no cause for grumbling.

Profits of Industrial Corporations

When we leave this relatively narrow field of bonds and public utility stocks,

however, and examine the financial reports of other classes of corporations we see that profits, both in amounts and rates, have risen far above even the enormous increases in the cost of living.

The most valuable basis for such a comparison is an exhibit recently presented to the President's Coal Commission by the coal operators. This exhibit is a compilation of the profits of 249 industrial and mining companies for each year from 1911 to 1918. The data for the first three years is somewhat fragmentary and unsatisfactory owing to the difficulty of securing corporation reports as well as to the fact that a large number of the corporations have been organized or completely reorganized since that time.

The purpose of these elaborate tables was to prove that, as profiteers, the coal operators were no more guilty than other industries. It is a remarkable exhibit.

In the exhibit the corporations are grouped by industries. I have, however, prepared a summary table which in a few figures tells the whole story:

PROFITS OF 249 LEADING AMERICAN CORPORATIONS

	<i>Amount</i>	<i>Per cent on Capital Stock</i>
1914	\$368,387,134	7.2
1915	663,375,559	12.3
1916	1,420,369,798	24.2
1917	1,336,821,943	21.9
1918	927,377,714	16.1

It should be noted that in the case of nearly all corporations the amount shown in the table represents the net amount available for dividends after the payment of interest and provision for all taxes including income and

excess profits taxes. In some cases no provision was made for taxes but this is more than offset by the inclusion of excessive reserves for depreciation, taxes and other items by the majority of corporations. It should also be noted that the figures for 1918 cover only 182 corporations, as the reports for 67 were not available. This explains the apparently great drop in profits in 1918. The percentage earned on capital stock is, however, accurate and may be accepted as representative, as it is computed by comparing capital stock and profits of identical corporations.

Corporate Profits and the Cost of Living.—Accepting these figures as a representative index of the earnings of industrial and mining companies, comparison may be made with the standard cost of living index of the Bureau of Labor Statistics:

	<i>Cost of Living</i>	<i>Profits</i>
1914	100	100
1915	103	171
1916	117	336
1917	141	304
1918	172	224

These figures effectively answer the question "Have profits kept pace with the cost of living?"

Profits not only kept pace with the cost of living during the war period, but they also doubled and trebled its increase. The comparison is graphically shown by the diagram on page 158.

Some interesting deductions may be drawn if we calculate for each year the amount of surplus profits for these 249 corporations over the increased cost of living. For example, in 1916 the cost of living index stood at 117, the profits index at 336. After allowing for the increase in the cost of living,

therefore, there was in 1916 a surplus of profits of 219 points, equal to more than two years of profits at the rate of 1914. Taking the four war years 1915-18 together we find that the surplus in the profits index over the cost of living index totals 502 points. Even after allowing for the maintenance of the purchasing power of profits during the war years there is sufficient surplus to maintain the pre-war basis of profits over a period of five years. In other words, even if these corporations should make no profits whatever for *five* years, an average rate of profit equal to that of 1914 could be maintained out of their war surpluses.

I have also compiled from the same exhibit a table showing the average rate of profit earned on capital stock in various lines of industry. These various lines of industry are classified in two great groups, depending upon whether they manufacture primarily for farm and household use or for industrial purposes. It is interesting to note that the greatest *increase* in the rate of profits has been in industries manufacturing industrial material and equipment. This is due primarily to the fact that the rate of profit earned by the corporations manufacturing industrial material and equipment was abnormally low in 1914. The table follows.

Similar statistics drawn from a variety of sources might be presented in great volume, but no matter what source of material is used or what comparisons are made, the conclusion is inevitable. *The average rate of profit of American corporations has increased during recent years far beyond any increase in the cost of living. During the war the increase in the rate of*

profits was so much greater than the increase in the cost of living that enormous surpluses were created which may be drawn upon, if necessary, to compensate for any losses which may occur during the lean years which are likely to succeed the great industrial boom which occurred during the war.

AVERAGE RATE OF PROFIT EARNED ON CAPITAL STOCK

	1914	1915	1916	1917	1918
<i>Farm and Household Supplies:</i>					
Agricultural implements.....	6.7	8.6	9.3	12.4	9.8
Baking.....	7.7	6.2	6.7	8.3	8.5
Boots and shoes.....	1.1	8.2	14.7	19.6	17.7
Canning.....	4.5	9.9	13.2	32.2	14.9
Coal-Anthracite.....	18.6	17.2	18.3	22.9	16.9
Cotton goods.....	11.7	8.0	13.3	17.9	20.5
Fertilizers.....	10.8	5.7	9.9	8.4	13.4
Flour mills.....	20.8	13.8	13.1	26.8	16.5
General merchandising.....	5.1	12.3	16.1	14.8	13.0
Ice.....	2.9	3.0	4.0	5.6	6.3
Musical instruments.....	6.9	8.5	11.6	6.6	17.6
Petroleum.....	9.6	18.6	35.4	30.4	22.3
Printing and publishing.....	4.1	4.4	5.6	5.1	4.5
Silk.....	11.8	12.9	17.2	20.4	18.4
Slaughtering and meat packing.....	16.0	21.9	23.6	32.5	16.8
Sugar.....	6.4	10.2	19.1	14.4	10.7
Tobacco.....	11.8	13.2	15.3	13.3	16.6
Woolen and worsted.....	5.4	7.6	10.1	18.7	10.2
Total.....	9.5	12.8	19.7	20.1	15.0
<i>Industrial Material and Equipment:</i>					
Acids, chemical, etc.....	9.1	12.6	20.1	16.5	16.7
Automobiles.....	8.8	18.7	20.9	14.4	11.7
Clay products.....	3.4	3.5	8.6	15.8	13.5
Coke (by-product).....	14.4	13.3	81.9	44.5	17.9
Electrical appliances.....	8.4	9.9	16.7	21.5	16.3
Explosives.....	10.8	45.0	70.5	37.8	32.6
Glass.....	6.1	6.2	19.1	22.3	15.9
Iron and steel.....	2.8	9.6	33.9	27.5	16.1
Leather.....	5.5	8.0	18.0	16.6	10.1
Lumber.....	1.1	0.9	7.5	11.0	3.2
Miscellaneous machinery.....	5.9	11.1	22.7	13.5	13.9
Mining—copper.....	11.6	19.4	38.0	36.0	19.4
Mining—lead.....	6.8	15.3	22.4	19.5	16.8
Paper and wood pulp.....	2.1	1.7	10.7	11.9	9.0
Railway equipment.....	6.3	6.1	13.5	13.8	15.4
Rubber tires.....	9.9	14.0	14.6	19.0	21.8
Shipbuilding.....	3.0	5.1	8.7	22.6	30.9
Total.....	5.8	12.1	27.5	23.3	16.9

Prices and Excess Profits Taxes

By DAVID FRIDAY

University of Michigan

IF we may judge by the utterances of business men and of the press, the great mass of the American public believes that the excess profits tax has been largely responsible for the present high level of prices. Most of those who have spoken or written to this effect have thought it unnecessary to present proof in support of this conclusion; nor have they gone to the trouble to examine in detail the logic of the supposed causal connection. The report of the New York Chamber of Commerce states that "the effect of excess profits taxes on business enterprises and on the high cost of living is so evident as to require little explanation." May it not be possible that here, as in so many other instances in the history of political economy, the co-existence of two phenomena in time may have led to an erroneous conclusion with respect to their causal relations? The excess profits tax will no doubt be abandoned before the presidential election next fall. Its repeal will be conditioned upon considerations other than its effect upon prices, but it is incumbent upon the economist to examine critically the assertion that our first differential tax upon profits raised the price level by an amount greater than the tax.

The discussion of this question has proceeded with little reference to the facts concerning prices, profits, or taxes. These facts seem to the writer of such an unusual nature and so essen-

tial even in a theoretical discussion of the subject that he has decided to adopt the method employed by Sir William Petty in his *Political Arithmetic*. "The method I take to do this," said Sir William, "is not very usual; for instead of using only comparative and superlative words, I have taken the course to express myself in terms of number, weight or measure; to use only arguments of sense, and to consider only such causes as have visible foundations in nature."

EFFECT OF EXCESS PROFITS TAX ON THE RISING PRICE LEVEL

To one acquainted with the course of prices, profits and taxes, there are disturbing facts which do not harmonize easily, to say the least, with this glib theory which finds in the excess profits tax the chief cause of the rising price level. The price level did not wait for the advent of the excess profits tax in America. It started its ascent in July, 1915 and continued it blithely until in March, 1917, the month previous to our entrance into the war, it stood at 160 per cent of the 1913 level. It continued its rise until July, 1917; at that time it stood at 185. No excess profits tax law had yet been passed. The first law was passed in October, 1917, but no material rise in price occurred for some months thereafter.

Under this first excess profits tax law the combined corporations of the United States paid 15.27 per cent of

their reported net income in excess profits tax. After doing so, they had remaining net income equal to 210 per cent of the highest amount which they had earned in any pre-war year. For the year 1918 the excess profits rates were increased to the point where they absorbed approximately 25 per cent of the profits of that year. In 1919 the rates were materially reduced. As against \$2,400,000,000 of taxes in 1918 they yielded only one-half that amount in 1919. Prices in 1918 averaged 197 as against 175 in 1917 and 160 in the month previous to our entering the war. Despite the reduction of the tax in 1919 prices stood at 238 in December of that year. What we have, then, is a rise of 60 per cent in the price level before any excess profits tax was either levied or discussed, and a further rise of 27 points before the tax was passed. Then a comparatively slight rise in prices during the period of our highest excess profits taxes, and a renewed and rapid rise when the amount of the tax was cut in half. If one were satirically inclined, he might affect to look with apprehension upon a further reduction in the excess profits tax. This brief review of the course of prices and of taxes certainly casts serious doubt upon the assertion that "the effect of excess profits taxes on business enterprises and on the high cost of living is so evident as to require little explanation."

Nor does a study of the course of profits lend any support to the statement that "for every \$6.00 or \$7.00 taken from the consumer, ostensibly for excess profits tax, only \$1.00 ever reaches the United States Treasury." It would follow from this that profits

had increased, not merely by the amount of the tax, but that they had far outrun the amount collected by the government. But this is not what the statistics of profits disclose. They show profits as follows before deducting taxes:

1913.....	\$4,339,551,000
1914.....	3,940,000,000
1915.....	5,310,000,000
1916.....	8,766,000,000
1917.....	10,730,000,000
1918.....	9,500,000,000
1919.....	8,500,000,000

The figures for the years 1918 and 1919 are based upon estimates so carefully made that the final published figures will be but slightly different. After paying excess profits taxes the amount of net income remaining from 1917 to 1919 was as follows:

1917.....	\$9,100,000,000
1918.....	7,100,000,000
1919.....	7,300,000,000

It is not true, therefore, that profits have increased since the imposition of the excess profits tax. Nineteen hundred and seventeen was the highwater mark of profits, and the tax was not imposed until the year had almost closed. After paying taxes the profits of 1918 and 1919 are far less than they were in 1916.

All of this reasoning concerning the effect of excess profits taxes upon prices rests upon one of two assumptions. Either it assumes that the state of demand during the last three years has been such that the public has been willing to pay practically any price and that sellers would not have charged high prices except under the necessities imposed upon them by the tax. This assumption certainly needs proving. It is not the sort of

thing which can be accepted as a matter of course. The alternative assumption is that the profits of industry are such a small return upon the capital that the addition of a tax made it no longer worth while for the entrepreneur to remain in production. Therefore, unless the tax can be added to price, production is decreased and price rises in consequence. Now the figures already presented show that the profits of 1916 were already twice as high as those of any pre-war year, while those of 1917 were two and a half times as high. The following table shows that the tax fell heaviest upon industries like manufacturing, mining and trade. These are the industries which had profited most by the war.

shows the net income for 30,892 corporations classified by industries and grouped according to the percentage which the corporations earned upon their invested capital. This table might well serve as a warning to those who desire the abolition of the excess profits tax. They were wise to confine themselves to "comparative and superlative words, instead of citing facts." For if the public is given these facts, fully and honestly, it will probably be impossible to abolish the tax.

RELATIVE POSITION OF SUPPLY AND DEMAND

Those who believe that all these movements in the price level were caused by the excess profits tax ascribe

TABLE I

Net Income and Excess Profits Taxes of all Corporations in the United States Pre-war and in 1916 and 1917 (Expressed in Millions)

Year	Financial	Railroads and public utilities	Manufacturing, mining, and mercantile	Total
Average net income, three years, 1911-1913.....	\$459,154	\$913,299	\$2,422,683	\$3,795,136
Net Income, 1916.....	528,506	1,541,076	6,096,327	8,765,909
Net Income, 1917, before paying excess profits taxes.....	962,860	1,303,824	8,463,676	10,730,360
Excess profits taxes.....	41,767	60,450	1,536,531	1,638,748
Net Income, 1917, after paying excess profits taxes.....	921,093	1,243,374	6,927,145	9,091,612
Per cent tax to net income, 1917.....	4.33%	4.63%	18.15%	15.27%

The actual percentage which various corporations earned upon their invested capital in 1917 is illuminating in this connection. It is also significant as throwing light upon the validity of our assumptions concerning the normal rate of profit. The next table has been prepared from the Senate Document entitled "Corporate Earnings and Government Revenues." It

to that fiscal measure remarkable powers of levitation, for according to their analysis it produced an increase in price even when the tax was falling. Where the forces are so many and so complex as are those which lie at the foundation of the price level it is impossible to make convincing statistical proof of causal relations. We must supplement our investigation of facts,

therefore, with a *a priori* analysis. Here the economist's analysis of the forces which control price lends little color to the proposition that a differential tax on business profits will affect price. No doubt it still holds true that supply and demand are the only doors through which the effective causes of change can reach prices. We may safely assume, too, that the marginal pro-

ducer will have an effect upon price, especially if he is tax free and if he contributes a substantial portion of the supply. Now with respect to the relative position of supply and demand, the situation during the last three years has probably been one in which the supply of goods could be but little increased. Further, the visible supply is far short of the demand at pre-war prices or even at the prices which prevailed when the excess profits tax was first imposed. The condition was one, therefore, in which it was possible to sell goods for a price largely in excess of cost and so at a profit above normal. In such a situation prices rose. But surely it is a bit bold and unwarranted to assume that prices will rise to this

high point only under the stimulus of excess profits taxation.

THE MARGINAL PRODUCER

The tax can be added to price only if it falls on the marginal producer. But the marginal producer, if he be the one who is operating at the least profit, or at any profit not greater than 8 per cent, pays no tax. If he be a

TABLE II
Net Income of 30,892 Corporations in 1917

Percentage of net income to capital	Financial	Railroads and public utilities	Transportation by water	Agriculture	Manufacturing, mining, and mercantile	Total
Under 10%	\$13,196,481	\$349,189,634	\$1,234,161	\$11,406,299	\$101,952,626	\$476,979,201
10-15%.....	29,993,941	70,634,613	476,988	12,329,659	275,712,345	389,147,546
15-20%.....	6,086,476	21,207,001	342,609	11,727,481	537,246,584	576,610,151
20-25%.....	4,997,479	5,053,306	795,384	8,918,816	546,806,982	566,571,967
25-30%.....	1,098,866	3,531	2,337,854	6,846,975	313,941,558	324,228,784
30-40%.....	767,187	30,486	7,000,892	13,042,739	668,613,578	689,454,882
40-50%.....	182,685		3,728,476	1,837,818	1,183,859,402	1,189,608,381
50-75%.....	50,299		4,496,975	12,754,592	275,655,773	292,957,639
75-100%.....	9,809		21,542,242	449,198	111,374,338	133,375,587
Over 100%.....	123,018	52,229	1,395,374	296,999	116,164,233	118,031,853
Total.....	\$56,506,241	\$446,170,800	\$43,350,955	\$79,610,576	\$4,131,327,419	\$4,756,965,991

ducer will have an effect upon price, especially if he is tax free and if he contributes a substantial portion of the supply. Now with respect to the relative position of supply and demand, the situation during the last three years has probably been one in which the supply of goods could be but little increased. Further, the visible supply is far short of the demand at pre-war prices or even at the prices which prevailed when the excess profits tax was first imposed. The condition was one, therefore, in which it was possible to sell goods for a price largely in excess of cost and so at a profit above normal. In such a situation prices rose. But surely it is a bit bold and unwarranted to assume that prices will rise to this

producer who was making more than 8 per cent and demands that larger amount because of opportunity cost, there is no escape for him by shifting to another industry, since he will be obliged to pay the excess profits tax in any other industry in which he may engage. It would seem pretty clear, then, that short of actual withdrawal from productive enterprise, the tax is not one which will affect supply in such manner as to increase price.

It is of course conceivable that the marginal producer may be of so little significance that his withdrawal from the field of production would not cause a material curtailment of supply, and that his presence does not affect

competition sufficiently to influence prices and prevent their rise.

NON-TAX-PAYING PRODUCERS

On the number and importance of non-tax-paying producers, we have, fortunately, some statistics. Nineteen hundred and eighteen was the year of the highest excess profits tax rates. A sample of 6,712 corporations shows that 3,064 of that number paid no excess profits tax whatever. These represented almost exactly one-third of the total invested capital of this group of corporations. They earned, on the average, 5.2 per cent. During the pre-war period, their capital was over 38 per cent of the total of this group, and they earned 7.4 per cent on their invested capital. It is very difficult to believe that these establishments representing 45 per cent of the total number and one-third of the total capital exercised no influence in competitive price making.

When we examine the remaining 3,648 corporations we find that 1,497 paid tax under the 30 per cent bracket, and that their total tax amounted to only 7.66 per cent of their net income. This group, together with those that paid no taxes, had over 60 per cent of the invested capital of these 6,712 corporations. Certainly their freedom from excess profits taxes should have given us abundant guarantee against the shifting of this tax.

But, as Hobson long since pointed out, it may be that neither of these groups is marginal, that the marginal man is found among those who made extraordinary profits. These are the men who have great resourcefulness and initiative and can easily shift to new fields. But shifting avails them

nothing, as the excess profits tax applies to all fields of industry.

But one possibility still remains. May they not agree with the father of Huckleberry Finn. When the elder Finn was just entering upon the early stages of delirium tremens, he summed up his attitude toward our political institutions in general in the trenchant conclusion that "this is a hell of a government." May they not, similarly minded, withdraw from industry altogether, and from their citadel of past profits, accumulated in the days when there were no excess profits taxes, observe what the *Wall Street Journal* calls the "vampire-like" activities of the government.

TAXES ON EXCESS AND WAR PROFITS

The rate of profits which was sufficient to induce them to remain in business during the pre-war period would seem to be the best evidence on this point. Of the 6,712 corporations whose incomes were cited for 1918, 2,151 corporations paid practically all of the \$121,039,923 of taxes of this group, 1,497 paid \$7,412,123 and 3,064 paid no taxes. During the pre-war period these 2,151 major taxpayers had earned \$89,298,925 on an invested capital of \$603,000,000. Evidently 15 per cent was sufficient to keep them in production during these pre-war years. During 1918 they earned a net income of \$281,775,190 on an invested capital of \$1,060,000,000 or 26.6 per cent on their invested capital before taxes. Of this the government took 43 per cent, leaving them approximately 15.2 per cent free and clear on an amount of capital 40 per cent larger. This additional capital largely represented war profits of

the years preceding 1918. These corporations would hardly be moved to withdraw from industry altogether by the workings of the excess profits tax.

But these taxes include not only those upon excess profits, but the war taxes as well. Since the war profits taxes were levied for only a single year and do not apply to the profits of 1919 or subsequent years, we must know the size of the excess profits tax alone and the ratio of that tax to capital. This amounted to \$88,309,393 for the 2,151 corporations, and constituted 31.3 per cent of the net income of these corporations, leaving them 18.2 per cent on their invested capital after paying taxes, as against 15 per cent in the pre-war period. Under the rates in force in 1919 these corporations would have paid less than \$58,000,000, and would have remaining over 21 per cent on their invested capital.

Which of these groups of corporations, then, actually curtailed supply, or even threatened to do so, in such manner as to produce the rise in price? In other words, who shifted whose taxes? In the absence of monopoly it is extremely difficult to believe that any of them curtailed their supply. The buyer was placed at the mercy of the seller, not by the excess profits tax, but by the fact that the general supply of commodities had reached its maximum. There is absolutely nothing to prove that buyers would not have been just as completely at the seller's mercy if there had been no excess profits tax. Nor is there anything to prove that the seller would not have pursued his advantage as vigorously. That is an end for which sellers strive diligently and skilfully.

MONOPOLISTIC ENTERPRISES AND TAXES

But what of monopoly? It is a well-known principle of price that prices of goods marketed under monopolistic conditions are fixed at the point where they will yield the highest net profit. It avails the monopolist nothing, therefore, to raise his price when he is confronted with an income tax. Any change in price will lower his tax, it is true, but it does so only by lowering his income. The amount that remains after payment of taxes will be less at the new price than at the former one. Of course, if a monopoly puts itself upon a fixed profit per unit, as some automobile manufacturers are said to do, then it may be that the imposition of an excess profits tax will produce an increase in price. But this is only because the monopolist had not pushed his advantage to its logical conclusion before.

In cases of monopolistic enterprises or of other enterprises which are making high percentage of profit, the working of the excess profits tax actually tends to stimulate the investment of new capital in the old enterprise and thus to increase the supply and lower the price of the product. Moreover, this is the more true as the maximum rates of taxation are increased. For the additional invested capital will add to the ultimate net income available for distribution, not only the amount which is earned from the sale of the additional product, say 5 per cent, but it will increase the exemption by 8 per cent of the invested capital and so reduce the amount which is subject to the highest rates. Thus, if a company on an invested capital of \$10,000,000 makes a net income of

\$2,500,000 (or 25 per cent) its excess profits taxes under the 1919 rates would be \$439,400 and its net income after taxes \$2,060,600. Now assume that the investment of \$2,000,000 of additional capital will increase its net income by \$100,000 or 5 per cent on its additional capital. This return would probably not be sufficient inducement for the investment. But an excess profits tax at even the low rates of 20 and 40 per cent which prevailed in 1919 will now be only \$367,400 on the net income of \$2,600,000, leaving \$2,232,600 after payment of taxes. If we compare this amount with the amount remaining originally, we find that the net income left to the corporation has increased by \$172,000, or 8.6 per cent on the additional invested capital of \$2,000,000. This would probably be a sufficient inducement for the new money, as it is well above the going rate of interest. This effect of additional invested capital has been recognized by those who have advised corporations in excess profits tax matters, and has been noted by J. C. Stamp in a recent article in the *Economic Journal*.

EXCESS PROFITS TAX NOT CAUSE OF INCREASED PRICES

Neither the statistical facts nor the implications of economic law support the conclusion that the excess profits tax has been responsible for the increase in price which we have witnessed during the last five years. The most that can be said for it is that the tax may have given some seller the courage to move his price up a little

earlier, or a little farther, than he would otherwise have done. But not even this much can be conceded for the rise of 60 points which occurred between July, 1915, and March, 1917.

Change of Institutions and Attitude

To trace the effect of the complex and tangled causes that have produced the present price situation is a long and arduous task. In the writer's opinion any such explanation must take as its point of departure the complete revaluation of ends which took place in the European mind when the nations went to war. It must conclude with an analysis of the present inefficiency of labor, a factor which increases the cost of the labor element in production far more than is indicated by the mere rise of wage scales per hour or per day. Between the beginning and the end of the war a whole series of institutions and of human attitudes has been wrecked. The gold standard, conservative banking policy, a private economy which set store by a constant power to demand the things needed for a customary class standard of living, our mental attitude toward national indebtedness, our conception of what constitutes an honest day's work for an honest day's pay; every one of these phrases stood at the beginning of the European war for a definite part of the institutional situation within the confines of which the industrial life of the people moved. Every one of these institutions has been radically changed. In the story of that change lies the explanation for our new price level.

The Problem of Incentives and Output¹

By ORDWAY TEAD

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IT is a fair assumption in all discussion of incentives to work that admitting, as we must, the need of maximum productivity at the present hour, we also admit that the results and benefits of increased production should accrue to all groups of industry and the community. Those of us who have been longest in the field of personnel administration are increasingly impressed with the professional quality and status of personnel work. We are not merely underlings hired to keep factories full of workers; we are, or should be, competent executives imbued with professional standards which suggest that our work is successful to the extent that we are servants not only of a corporation, but also of the community. For the essence of this professional status, I take it, is a sense of high ethical obligation to conform to standards of sound procedure, just conduct and public service, to the extent that we have come to see the light on these matters.

I say all of this by way of preface because from the start personnel and other executives should realize clearly that they have no interest in exploiting

the human nature of the manual workers under them. They have, as professional managers, only an interest, and a very deep interest, in having work done well, quickly and in abundance. We want to see the necessary maximum production obtained with the minimum of effort and friction.

One thing which is increasingly plain today is that there is unnecessary effort and needless friction, both human and mechanical, where there is no interest.

Indeed, the text of today's discussion is that the roots of efficiency are two: namely, perfection of mechanism and process, and application of human energy in the most effective way. We know today that the most effective way of applying human energy, is to have people voluntarily eager and absorbed in what they are doing—in short, interested.

If, then, interest in work is one of the essentials to fundamental efficiency, it is important to carefully analyze the elements of interest, that we may understand what practical provision should be made for arousing it.

DEFINITION OF INTEREST

People are interested when an activity tends to keep occupying their attention and absorbing them by some appeal. The appeal may lie in the very difficulty of the task or in the downright enjoyment in its perform-

¹Read before the National Association of Employment Managers, New York, February 28, 1920.

For fuller treatment of the same subject see Chapter XV, "Arousing Interest in Work," in Tead and Metcalf *Personnel Administration: Its Principles and Practice*. McGraw-Hill Book Company, 1920.

ance, or it may be in the anticipated approbation of one's associates, due to one's proficiency. People are interested when attention has passed the point of conscious effort, and has become eager, immediate and spontaneous. Attention can be so commanded when we are actively engaged—have a definite object in view and recognize something at stake, "something whose outcome is important for the individual." A display of interest is therefore a display of "self-expressive activity."

Elements of Interest in Work.—The essential elements of interest in work seem to be: (1) self-choice of the activity; (2) pleasure in its continuance; (3) a sense of significance and value in its performance; (4) opportunity to secure the approval of one's associates for one's accomplishments.

A condition of monotony exists where these elements are lacking. Remove the chance for self-choice of the action, for understanding its significance, for having the approval of one's fellows, and the labor is sheer drudgery. "Monotony means that growth and development have ceased."² Monotony is present when work has become so habitual as to be automatic, that is, when it is making no demands upon the active attention; or when work is found to be temperamentally uncongenial, and is thus, for any reason, precluding the chance for self-expression and development through the work.

Reaction of the Worker to His Work.—If these definitions are correct, interest and monotony are not characteristics

of certain kinds of work. They are characteristics of people in their reaction to certain kinds of work. A job is not inherently interesting nor inherently monotonous. It is interesting or monotonous *to a worker*. There are inevitably these two aspects contributing to create the one fact of the worker in-his-relation-to-his-work. In each separate case the two must fit; the worker must find the job that satisfies him. He must be able to register there; and in order for this to happen it must fit from the point of view of opportunity *for him*, in relation to his capacity, motives and desires. It is, in short, a dynamic and changing fact. The worker is either progressively more interested because the adjustment is always improving, or he is progressively less interested, and usually less capable of being interested in the work.³

Jobs, as jobs, are therefore neither interesting nor the opposite. It all depends on the relationship. But there are, of course, jobs which because of their simple content do quickly become habitual and are then automatic. Any prolonged performance of such jobs will, of course, become monotonous; and whether, as now constituted, they can of themselves be interesting is, in our opinion, a grave question. The possibility of developing a derived interest for this type of work must be considered. But there are many jobs usually thought of as monotonous, which require thought, care and attention, and could therefore be much more interesting than they are, if only the worker

²Dewey, John. *Interest and Effort in Education*, p. 36.

³See *A Point of View in the Field of Industrial Personnel*, The Scott Co., Laboratory, June 24, 1919.

had the knowledge, ability, aptitude and background, out of which interest would normally arise.⁴

JOB ANALYSIS

This points to a fundamental need: the need for analysis of the *intellectual content of jobs*. From the point of wise selection of workers, promotion, transfer, modifications in process and training, we need more exact data as to what qualities, aptitudes, traits of temperament and technical knowledge each job demands. Such study we can confidently predict from all the job analysis which has thus far been done, reveals an astonishing amount of special skill required at many supposedly monotonous tasks.

Such study will, moreover, tell us how many jobs of each different kind there are in a factory. We know that it is inaccurate to speak of all factory work as repetitive drudgery. The work of machine maintenance occupies some workers. The handling of

materials and trucking occupies others. There is assembling, inspection, packing, shipping. The actual proportion of unskilled machine-feeders varies from plant to plant, but apparently it runs between 40 per cent and 80 per cent. We must not ignore the fact, however, that the elements of insecurity in the job, non-control over work, little significance in the work, little chance for fellow workers' approval, may all be present at repetitive and non-repetitive jobs alike, and that monotony exists wherever the chance to make the job one with one's self is no longer present.

CAUSES FOR LACK OF INTEREST AMONG WORKERS

I should like next to consider why it is that, at present, we have so little interest in work among the rank and file—a fact to which both workers and managers have widely testified. This is, in a sense, a negative point because it further delays consideration of practical suggestions for getting interest, but since the rest of the day is devoted to the technique of this subject, it is valuable to spend enough time on the introduction to get a really sympathetic understanding of the causes of the present condition.

It is plain, from what we have said, that when interest is present there is a pleasant condition of mental stimulation, alertness and responsiveness in the individual. But certainly mental stimulation, alertness and responsiveness are not the qualities which the ordinary manager conceives as being present in the rank and file.

Fear.—In this connection I wonder if it is generally realized what a determining part fear has played in

⁴ An interesting illustration of this is given by F. H. Selden, "A Just Standard of Industrial Intelligence," in *American Journal of Sociology*, May, 1919, p. 646. "Usually, only cheap help was employed at this machine, as the foreman prided himself on getting work out at a minimum of expense. The regular hand quit and it was necessary to put another man in his place. The new operator looked the machine over, fixed it up, and decided to run it on a faster speed. To do this he must watch it very closely. . . . This necessitated his keeping his ear close to the cutter. Being a tall person this could be accomplished without undue fatigue only by sitting down. He got a nail keg and sat close to the machine, but as his ear was directed toward the cutter his eyes were apparently looking about the room. Only a day or so elapsed before the foreman called him down for his lazy tendencies in sitting at his work. This resulted in his putting his machine back on slow speed and assuming an attentive attitude."

shaping the mental life of manual workers. Fear is an emotion which gives rise to a strained, tense and abnormal state of both body and mind. The subject of fear, particularly if the fear is continuous, is balked and in a sense prohibited from the use of all his faculties. Whatever alertness or responsiveness the fearful person has is all in the direction of removing his fears, or of protecting himself from having them realized.

Of foremost importance to the worker is the fear of unemployment. The fear of losing one's job, either because business has become slack or because, through arbitrary exercise of authority, there may be an unfair discharge, is constantly present. As Whiting Williams says in his interesting article on "What the Workers Think," in *Colliers*, February 21, 1920, "give us this day our daily job," is the secret prayer of every worker, particularly if he has a family. There is fear that wages will not cover necessary expenses; fear of the undesired arrival of another child, or of sickness that will bring an emergency demand on income. There is also the fear of reprimand—the fear of being "bawled out" by the foreman. "I doubt," said Henry S. Dennison in a recent address at Richmond, Va., "if there is a man here who believes that he can make better progress in his factory by bellowing at his men and I doubt if there is a man here in whose plant there cannot be found some sample of the bellowing-bull type of foremanship."

There is the fear, sometimes conscious and sometimes not, that the reorganization of process and method, which is frequently taking place in

factories, means such a change in the method of doing the work that the worker's acquired skill will no longer have value. This applies particularly, of course, to the introduction of machinery, the incidence of which, as it falls upon the individual worker, may be temporarily unfair and cruel.

Then there is a fear, which has in the past unfortunately had all too good a basis in fact, that the more work the individual did the less return he would get for it because wage rates would be cut or orders would be more quickly completed and a lay-off would ensue.

Unresponsiveness.—In addition to this fact of fear as a cause of non-interest, there is the fact of a mental condition only to be understood in the light of the worker's early years—a condition of unresponsiveness and even seeming lack of ambition and capacity. This condition, I believe, is in nine cases out of ten a pathological condition. Such people are under-developed mentally, not because they are lacking in native capacity, but because there has been a persistent suppression of their natural mental responses. They are the victims of suppressed desires; and it is important to remember in this connection that psychologically the greater and the longer the repression to which the individual has been subject, the more difficult it is for his emotional life to thrive in a wholesome way.

Recent psychologists point to the importance in individual life of what they term "infantile fixations," by which they mean the influences which were of determining importance in shaping the mental life of the individual in his first five years. They even go so far as to say that the mental environment of those early years conditions

in a fundamental way the individual's possibilities during the rest of his life.

The Immigrant Worker.—We have, I believe, at least three groups among our manual workers to whom we can come with far greater insight and understanding than at present, if we understand the importance of this psychological truth.

In the ten years before the war there had been at least 10,000,000 immigrants into this country, the majority of whom came from central and southern Europe. This means that the early mental environment of that majority was vastly different from that which they found in their new surroundings. The civilization from which they came was an agricultural civilization. They were mostly peasants, often only one or two generations removed from serfdom. The influence of an autocratic state and autocratic church had reduced educational and cultural opportunities to a minimum; it was literally true that such people did not have a childhood in which the normal impulses were allowed satisfaction and adequate development. Because of that tireless vitality which characterizes the human race, they were, in fact, so dissatisfied with their restricted life that they broke through, and came to this country in an effort to secure release. In my judgment, this manifestation of initiative betokens a real stamina and a virility which our country needs; but even so, those people cannot make amends in their generation for the restrictions and mental and emotional impoverishment of their own childhood.

The Tenement Child.—We have a second group of workers which have grown

up in our large industrial cities. You should read Miss Jane Addams' fascinating account in the *Spirit of Youth in the City Streets*, to realize the consistent and dangerous manner in which our tenement life deprives children of the opportunity for normal releases. Their sense of adventure must come from such escapades as stealing fruit from street peddlers, stealing milk bottles, stealing rides on cars, and in each case trying to get the sense of the chase by eluding the policeman. Their experience of sex matters begins at an unduly early age because where a whole family occupies two or three rooms it is inevitable that this whole side of life should come conspicuously to a child's attention and arouse prematurely and abnormally impulses which need no artificial stimulus. Physically and emotionally, workers who grew up in our slums did not have the chance to be normally developed.

The Company-Town Worker.—And we have in our company owned mining communities and in our isolated textile towns a third group of children, whose childhood has all the characteristics of that of the slum children without the excitement of the city streets, but happily with the addition of green grass and trees, unless perchance, as in coal mining towns, the countryside has dried up under the withering blight of coal dust.

THE TASK OF STIMULATING THE WORKER'S INTEREST

I am not trying to overdraw the picture, but I hear so frequently the objection that people do not want to be interested in their work or that they like monotonous work, that I

want to stress the point that where managers find this to be the case, workers are usually responding sub-normally to an unwholesome situation. Normal people, I can assure you, do insist and will insist that the activities upon which they are to be engaged during the majority of their working hours shall engage their interest in real and permanent ways. Personnel executives have a very important and worthwhile obligation both to workers and managers in helping to effect a release of human energy, an out-flowing of natural human releases which will remove so far as possible these infantile limitations and these haunting fears of adult life.

Our task in securing interest in work is, in a word, the task of clearing the mental air in the life of thousands of individuals; the task of restoring people's self-confidence and self-respect to them; the task of calling out and summoning to new expression powers which the individuals themselves do not realize that they have. It is a fascinating study in group and individual psychology because we are going to find that different people and different groups will be stirred and moved to this release of creative power in a variety of ways.

William James puts the question and answer in a significant way. He asks "to what do the better men owe their escape; and, in the fluctuations which all men feel in their own degree of energizing, to what are the improvements due when they occur? In general terms the answer is plain: Either some unusual stimulus fills them with emotional excitement, or some unusual idea of necessity induces them to make an extra effort of will.

Excitements, ideas, and efforts, in a word, are what carry us over the dam."

If it is true that excitements, or emotional appeals, and ideas, or intellectual appeals, plus concentrations of effort or will, are what bring releases of energy, the problem today, as I see it, is to discuss what practical excitements and ideas are stimulating to interest in work. How, to put it differently, can we get opportunity for the individual in industry to have freedom of choice, pleasure in the work for its own sake, a sense of its significance and value and the opportunity to have the approval of one's fellows?

ROTATION OF WORKERS IN MONOTONOUS OCCUPATIONS

It seems to me that all the activities of the personnel department that have to do with intensive job study, that have to do with right selection and subsequent adaptation of the worker to his work, gain enormously in importance as soon as a plant decides to embark on a systematic program of making its work interesting; because all of these matters can help greatly to facilitate a freedom of choice and intelligent choice in work.

In this connection also, I am confident that plants are going to have to resort much more than they have recognized, to a systematic plan of transfers. We have as yet done hardly anything to compensate for the dullness of the most routine jobs by insisting that no worker shall be allowed to remain at them beyond a certain length of time. I appreciate that such a policy of transfer requires a change in the mental habits of both managers and workers, but it is a

change that looks in the direction of a better mental balance in the worker's life and ultimately, therefore, a more adequate release of his positive and active qualities. One of the watch-words of a campaign of getting interest in work is going to be: It pays to transfer.

Instruction Program for Workers

There are many types of jobs in which the worker will find pleasure in their performance simply because the activity itself is something which he craves. But we can only have pleasure in doing a thing for its own sake when we do it well. No one likes to do something for any length of time at which he is not proficient. This argues for the importance of a job instruction program in a scheme of securing interest. Managements owe it to their workers to put them at once into possession of all the available information about the best way to do the work that they have to do. Proficiency in itself is pleasurable. There is also pleasure in doing the work if, in the doing, some improvement can be made—some change in method of process which appeals to that sense of economy in the use of energy which is native to human nature. The contrivance of labor-saving devices is a pleasurable activity.

I am especially glad also to stress the place of the shop committee as a stimulus to production, because I believe that both in the direction of discussing and adopting improvements in process and in organizing the approval of one's fellow workers, the shop committee can have substantial value. Indeed, until the shop committee becomes a work or production

committee, it is only fulfilling a small part of its purpose.

Standards of Output.—It is of the very essence of interest in the work that the outcome of the negotiation about reward in relation to effort be clear and explicit as it is not today. At present we have no standards of a fair day's or week's output which have been formally agreed upon. We negotiate about pay; but not about the amount of work which is to take place in relation to that pay. I, for one, am convinced that study and negotiation about fair amounts of work, which is a proper subject for shop committee or collective bargain action, promises, when jointly done, to be one of the greatest spurs to interest. For it must inevitably develop out of such joint study and decision that all methods of technical procedure are considered and standards of fair amounts of output for workers of different degrees of skill are adopted; and thus another legitimate spur to proficiency will be provided.

In saying that a sense of significance or value in the thing done is an element in interest, we point to a truth which managers must discover anew and begin to apply afresh, namely, the close relation that exists between knowledge and action. We cannot be pleased with what we are doing and doing well unless we have some means of knowing that we are doing it well—knowing something of the results. There must be some measure of proficiency, and some publicity of it. One of the great values of the work that Robert B. Wolf has done on production records is that it acquaints both the individual with his own proficiency and also makes it possible at the same

time to compare his achievement with that of his co-workers.

Our activity also gains in momentum to the extent that we understand why it is that we are doing what we do; when we understand its meaning to us. A vital element in the worker's understanding of what he is doing is acquainting him with the relation of his process to the whole production and of indicating the use of the production to which he is contributing.

Mark Jones has a good story, in that connection, of a man visiting a plant where he found that the imagination of the office and executive organization had caught fire over the importance of a big order of pumps which were being made for an irrigating project in the Sahara desert. A sense of the significance of their work had aroused a new interest. But when in walking through the factory he got to the shipping room he asked one of the truckers who had some of the crated parts on his truck where the pumps were going, the worker shrugged his shoulders and said "they are going onto the freight car." That was as far as his knowledge of the transaction carried and he had, of course, as much interest in the work as that lack of knowledge should bring. I say that right down the line the workers have the right to the knowledge of the meaning and significance of what they are doing—its meaning to them in terms of accomplishment and reward, its meaning to the company in terms of volume and value of shipments, its meaning to society in terms of the use to which the product is to be put.

Organized Approval of Fellow Workers

Then, there is the importance of organizing the approval of one's fellow

associates; for the desire of all of us is to stand well in the eyes of those whose approval is of value. We want the emotional stimulus of sympathy; it helps to mobilize will and results in effective action. We have a sufficient body of experience now to say definitely that workers do find satisfaction in standing well in the eyes of their fellows, not alone in terms of comparative pay checks, but in terms of the quantity and quality of their work, in terms of the economy of their operations, in terms of their versatility—in short, in terms of their creative power. Moreover, it is a legitimate work of management to study how that sense of approval can be cultivated and organized in a plant.

There was, for example, an interesting experiment made at the Delco plant where they trained a dozen of the executives as guides and then routed the families of all the workers through the plant in small groups over a period of two or three months, in order that wives and mothers and children might see what it was that husbands, fathers and brothers were doing during the major part of their waking hours. It became clear that workers were proud to show how well they could work and the management claims that the production increased 5 per cent during these visits.

Fair Treatment of the Wage Problem

I cannot conclude this introductory discussion without making mention of the frequently heard comment that all the workers are interested in is the pay envelope. It goes without saying that unless wages are at the very least enough to provide a decent standard of living without anxiety, there cannot be interest in the work. Living wages

regularly paid are the first condition of casting out working class fear.

But after what I have said I hope it is clear that this idea of money as the sole incentive is an unwarranted over-simplification of human motives and human characteristics. The impulse to possession and the desire for increased financial return is indeed important, and it is legitimate. But there are other equally legitimate and important motives. The impulses to create and construct, to satisfy one's curiosity, to satisfy one's desire for the approval of others and one's sense of significance in work, are all legitimate parts of the human equipment and they demand satisfaction.

Industry has worked too long on the basis that all the workers want is wages. The thing to do now is to supply an incentive in the work itself, as well as in the rewards accruing out of the work. Admittedly, the non-financial incentives so-called, might be used to exploit the workers. But any discussion of the methods of interesting workers pre-supposes, as I have said, that the management has a disposition to treat the payment problem with reasonable intelligence and fairness.

Limitation Upon Interest

I want, in conclusion, to revert to the point at which we started in saying that our interest in securing legitimate incentives to work is a professional one. I think, if we are honest with ourselves, we have to realize that under existing conditions where the guiding motive in the conduct of so many factories is the amount of profit that can be extracted from the operation by the owners, we cannot expect to see the workers become unreservedly

and unqualifiedly interested. We can and we should do everything possible, but we cannot do all, to get interest so long as the motive of profit-making is dominant in the industrial structure. It would seem to be almost axiomatic that as between that plant where all possible profits were taken and one which publicly announced a policy of limited returns to capital, the degree of interest which it would be possible to arouse would, in the latter case, be substantially greater.

Indeed, I hope the time will come when personnel executives will publicly profess as keen an insight into fundamentals as those prominent consulting engineers, including such men as Harrington Emerson, Gantt, Scovell, Polakov, Knoeppel and others, when they submitted a memorandum to the President's Industrial Conference last fall, declaring that the "policy of extracting profit rather than rendering service has wasted enormous stores of men and natural resources and has put in places of authority those who seek selfish advantage regardless of the interest of the community."

The important reason why this policy of extracting profit has wasted human resources is that it has worked effectively to thwart and obstruct the release and free play of the constructive capacities of the workers because of insecurity of work, meager wages and no effort to wed knowledge to action.

As professional people, what we are interested in is an economic organization of our country and of our plants for use and service; and to get this we must secure everybody's interest in the work in every individual plant; to get this we must, to use a fine new

phrase, extend the stirring and appealing conception of each industry "as a great self-governing democracy of organized public service."⁵

You and I, with our professional interest in seeing a good job well done, must therefore do all in our power to make the factory a place where work can be a means of self-expression, where the worker can have reasonable freedom in choosing what he would like to do and can do well, where he can have a sense of its significance and

can secure the approval of his fellows. And where, of course, his return for the increase in output is in some measure commensurate with the increased return to the business as a whole.

And I, for one, am willing to admit that if we cannot or do not reorganize factories so that some approach to these several conditions is possible, then society will have to choose between the survival of factories and the survival of human souls. I have faith, however, that the two—machinery and personality—can continue not only to survive together but actually to flourish together!

⁵See the brilliant document published by the Garton Foundation in London, *The Industrial Council for the Building Industry*, 1919.

“ ‘More Production?’—Say, Where D’ya Get That Stuff?’ ”

By WHITING WILLIAMS

“**D**EES fine cool job, Buddee. Go slow—take easy—mebbe make last all day.”

This exhortation came to me in a whisper from my worker friend, Lorenzo, after the labor-gang boss had called the two of us up out of the hot and sooty checker-chambers beneath the big open-hearth furnaces and had ordered us to throw the broken checker-brick out of the cool passageway on to a low car for hauling away to the dump.

Lorenzo was only nineteen, but he had been “common labor” long enough to absorb thoroughly the “philosophy of production” which I found on the mind of the unskilled, foreign-born worker throughout the seven months of 1919 which I spent sleeping with him in the same boarding-house bed, shivering with him outside the same factory gates, and working beside him in the same steel mills, coal mines, ship-yards, roundhouses, refineries, etc., in an attempt to learn for my company the causes of our industrial unrest.

At the present moment, certainly, few things are more pertinent than that we should know the nature of the particular thinkings and feelings about this matter of producing which happen to be operated by the worker himself. And “I’ll say,” to adopt his manner of speaking, that it is impossible to get any proper understanding of these by the use of a reporter’s pad and pencil. On the

job—that is where Lorenzo lives; that is where we must talk with him—while we warm our hands together around the salamander waiting for the half-frozen grease to melt, or down in the silent “room” by the glistening “face” of a seam of coal with our car well loaded, eating a bite out of our buckets as we wait for the mule-driver to bring in another “empty.” In such places, thanks partly to the good will shown in my partial use of several of their European languages, Lorenzo and Stephanos and Pietro and Alfonso and all my other buddies did their best to show me the ropes, even though they knew I must have made a fearful failure “som’ers” else or I wouldn’t have been with them—“No American stay long time labor gang—unless he ‘nuts’ or too much w’iskee.”

The full quota of their kindly instruction in the science of production as they see it in the labor gang was such as made me, in each plant, do less the longer I stayed—as I became better trained in what was just about the only instruction or propaganda in the place—the underground propaganda which is whispered from lip to ear as the old-timer with his shovel emptied passes in the line close to you with your shovel full:

“Ps’st! Buddee, Ps’st!—Take it easy. Don’t keel yourself! Lotsa time.”

Not a pleasant propaganda to think about in these days when all the world is fighting hard to save its life by increasing its slender store of peace-

time goods and lessening its superabundance of war-time money.

But if my months at "hard labor" meant anything at all, they meant this: Let him who would cast the first stone at Lorenzo or any other of my easy-going "buddies" follow his advice and go slow before letting fly.

In a very few weeks of work alongside of him the would-be caster would learn with what amazing naturalness that work-avoiding propaganda results from Lorenzo's surroundings on the job and off of it.

Particularly, off of it.

Probably the biggest thing which rubs out of Lorenzo's mind most of what the world tries to tell him about "more production" is the trouble he has—usually—to *get on the job*.

PROLONGED PRODUCTION A RESULT OF JOB SCARCITY

At this particular moment in 1920, it may not be hard for him to find a job, but last winter and much of last summer the country was talking about more production just as much as now. Nevertheless, at that time—when war orders had been cancelled and peace orders were coquetting in hopes of lower prices—I know that in many parts of the country it was almost impossible for thousands of Lorenzos to find work. And it wasn't a pleasant thing for him or for me to know either.

"Not a job in the house. No, nothing at all," was the way the clerk in the government employment office kept answering—like a phonograph—all of us applicants in a voice purposely loud enough to reach every one of the room full of negroes and foreigners. "Not a thing, I tell you. The ——— Company laid off three thousand

yesterday and the ——— Company five hundred this morning. — No, sir, as I just said, there ain't a job in the house—unless you're 'skilled,' then you can try across the hall."

Almost hourly my twenty-five dollars was growing smaller. I had vowed that when it was gone I'd become a bum along with the rest of them if no job turned up. Hour after hour, I shivered at plant gates with fifty or seventy-five others in the hope that one or two workers might be sick or tired and so give one or two of us a chance at their jobs in the labor gang just for the day—always in vain. It made it mighty nasty business to pass by a bunch of homeless and cashless fellow-shiverers trying to warm themselves at a fire of ties by the railroad track while I fingered my money and wondered how long I could side-step joining them.

Even among the shiverers at the gates or in the employment offices there was surprisingly little talk about Karl Marx and his idea that the world could not possibly consume all it could produce, with the consequent necessity of frequent long, desperate, hungry loafing periods. But I did hear Democrats and Republicans and every other conceivable group cursed from the bottom of men's hearts for permitting it to come about that in a world which everybody knew needed goods, men had to go hungry—and see their wives and kids go hungry—because willing muscles could get no chance to produce.

"Look at them hands! Say, ain't them good enough to make a livin' for my family, huh? But by G—I've been all over this ——— town fer a fortnight and I can't find no job

no'wures! Ain't that a hell of a country now, huh?"

All the time there may have been plenty of jobs somewhere nearby if only we could have found them. But as long as some of the biggest employers would not use the government employment offices and not all would advertise, there was nothing for it except to wander around until we stumbled—with the help of many questions in this or that saloon—on to one. No one knows the awful, the heart-sick length of even one single day when it is spent in trudgings—to save carfare—and questionings (with assurances on all sides that, "Yes, it's going to be a hell of a hard winter, all right, all right!") and applyings—all followed by turndowns and these in turn by fearings about how soon the breadline and the station-house floor and the fire by the railroad will be the only things left.

Meanwhile any effort to cover more territory by using the telephone is sure to be frowned upon—"Better be here yourself and make sure."

"More production? Humph! More hell!"

In many districts visited throughout the country all the hiring of rough labor is done at the plant gates at only two hours during the day, with, furthermore, these two hours so nearly the same at all plants that often times a fellow can make only two gates during the entire day. Still, further, whenever I tried to learn from the plant policeman or the hiring clerk where I stood the best chance, I nearly always got the same answer:

"Well, now, about tomorrow—I can't say. But you be sure to be here. Don't fail."

The bar-keep or customers could be counted on, usually, for a pretty good opinion as to the relative chances, but even at that it was usually a case of waiting an hour or so after the announced hiring hour and then getting little more than a pointed and final, "No! Not a thing!"—without, usually, even a single "Sorry" to edge it.

Many of these guards and clerks must some time have been out of a job and so have felt the dejection and the loss of self-respect which even the lowest men feel when separated from both a job and a "roll." But at most of the gates the effect was to "rub it in" that the time of the jobless man is worthless to himself and to everybody else; and the strain upon his self-respect makes him a poorer worker.

The morale of a young chap of dapper appearance, who had waited vainly for a month twice every day without any offering in his line, a skilled one, was manifestly slipping daily from his long mixing with a great crowd of fifty or sixty unskilled men, in what was called the "Bull Pen." Even if he never became a "casual" or a hobo, the company that hired him would pay for his lessened interest in producing.

"But I'm d—d sure o' one thing," he concluded his cursings as we walked away, "you won't catch me workin' myself to death when I do get in."

After so much trouble getting on to the job, the next thing Lorenzo and the rest of us had to worry about in the labor gang—it is not so much the case with the skilled worker—was the easy-going ways so many of our foremen and bosses had of putting us off of it again.

On many kinds of work experience teaches the laborer to fear each day's quitting time because it often brings that distressing verdict which starts him out again on the circuit of the gates:

"Here y' are, Joe! This'll get you your time. Won't need you in the morning!"

The more "Joe" (Lorenzo is seldom called by his right name) is exhorted to be a thrifty citizen and think about his future, the oftener he whispers as you bend together to push the five-hundred pound barrel of pitch over the gravel:

"Say, Buddee, what you tink?—Dees job he last long time? Mebbe yes, mebbe no? W'at say?"

Seldom it is that his buddy ever knows the answer, but experience teaches the wisdom of playing safe and stringing it out at as slow a pace as the boss will stand for:

"Go easy—mebbe make last all week"—(or all month or all year).

Even foremen—paid though they are to look after the interests of the company—sometimes cannot forget their days in the gang far enough to fail to have an eye out for their own and their fellow-foremen's interests by seeing to it that the work is not used up too fast.

"My G—," one of them exclaimed to his assistant as he saw that it was three-thirty in the morning, over two hours from quitting time. "Say, if we do any more on this the day foreman won't have anything to do. To hell with it, let's hit the hay!"

Needless to say, that particular kind of foreman—or at least the gang-boss under him—isn't going to worry himself too much about production and

deny himself the pleasure of putting a producer or two off the job if he can thereby manifest his authority, or perhaps reveal the innate sensitiveness of his temperament and disposition.

"Hey dere! Doan' you hear me tell you pick 'em up dose brick by hand? What? Why, G— d— you, if you doan' like dees job you know d— well what you can do!— What's dat? Say, you go get your time! Yes, right now! We doan' need you 'round here."

Not that all gang-bosses are like that, though I will say that many of them do seem to cultivate temperaments just as if they were artists—which they aren't. Often, too, it must be said for them, their temperaments come from having larger responsibilities than any man can handle and be happy. But especially where the worker is foreign-born, very unskilled, and on ten or twelve hour turns, there are too many of this type. Wherever they are, they help to give this same idea:

"More production? Say, Charlie, w'ere you get dat stuff? To hell wid it. Take easy!"

And the same query and injunction follow close after this or that boss or other representative of the stockholders shrugs his shoulders helplessly or uninterestedly when asked for a shovel with a usable handle or for a reamer that holds its cutting tool; or when he passes by and lets everybody sweat and swear in vain while the work of four men stops because the millwright won't furnish a guide to keep the steel sheets in place on the pile. The stopping lessens the earnings of two and increases the fatigue of all

four, besides lessening their belief in the management's interest in getting out the stuff.

Down in the coal mine I did my best one day to help my instructor make a record. Incidentally, I know of mighty few things that ever gave me more satisfaction than did his enthusiasm over my skill and endurance in handling my shovel and getting the coal into the cars. But it was all spoiled by the car that ran off the track and took two solid hours of pushing and jacking and lifting and crow-barring. The disappointment made me want to swear most profanely. But he was hardened to it—it seemed to be the regular thing:

"Ah've asked mony and mony's the toime for iron in place o' these wooden rails. But 'tis often and often this happens, so don't ye moind too much, me la'ad."

If a worker whose income depends pretty largely on the service the management gives him through the track-layers, the machine-men who undercut his coal so that his powder charge will find it "off its feet" and so ready to fall away to the floor, the shot-firers who set off the charge and others—if *he* can take such disappointments easily, then the man who works by the day can be pardoned if he doesn't bother as much as he would if he could get more evidence that maximum output was worrying more people.

But even the piece-rate or tonnage man feels a certain bounden and unselfish duty to his fellows not to do too much as long as workers and work are in such uncertain and dangerous unevenness as all these things indicate to him.

"I believe in doin' a good day's turn," said my eighteen-year-old "catcher" who was making his ten dollars a day—as his helper I drew only four dollars because I was on time and not tonnage. "But believe me, I ain't a-goin' to be none o' your G—d—d hogs for either the work or the money."

"These d—d Greeks—the way they work themselves and their crew by grabbin' up all the sheets in sight!—Why, 'tain't hardly honest!—and yet here's the company a-puttin' 'em in ahead of us Americans."

Of course, even more definite than this fear of the work's running out before it gets fairly around the group, is the fear that speeding up and earning beyond what the management may feel a proper day's income, will bring a cutting of the rate—which will mean a harder day's effort for the same or less pay. Every such cut indicates to the worker, quite naturally, that the management is not so very seriously interested in maximum daily production.

It is this deep-down feeling that every worker has an inalienable right to some kind of a job that is behind much of the pressure for shorter hours.

"Yes," shouts the organizer at the Sunday afternoon meeting, "with men outa jobs all over the country we're goin' to go after eight hours in steel. And when we get eight hours, we're goin' after seven—if there's still men outa work."

The company is getting the comeback from this same feeling when it is given what is about the highest praise a worker can give:

"You bet, this company's blamed good for havin' work when any com-

pany has work at all and for spreadin' what work they is around so that everybody gets his share and no hoggin'. Yes, I'll say it's a great old company to work for."

It makes it look as though we people who live on salary don't get much idea of what is the most important item of all in the mind of the chap working for wages—the steadiness of his daily job.

It is true that the worker has the preferred position over the capitalist because he gets his dividends on the investment of his labor before the capitalist does—and that is an advantage which many workers do not appreciate. On the other hand, by closing down this or that department when orders are shy, when engines need fixing, or for a host of other reasons, the claims of labor may be completely side-stepped for the period, whereas capital continues to run its bill; it may have to wait and take a chance for the bill's payment, but the charge goes on and into the bill to be met some day. And every day's close-down spells the same old thing to the chaps working with the shovel and even those with the drill press.

"I'll say, Charlie, consumption'll have to have a pill or two to liven 'er up some or you and me's goin' to be out of a job—and then where'll the wife and kids be, huh?—Better go slow."

"Why only seven cars today, Andy?" called one voice beneath the lamp in a visor as we came racing down the main butt of the mine behind a galloping mule one Saturday afternoon.

"If take all damn fool coal out today," said Andy, with a glistening set of smiling teeth showing through the dark, "no can work next week."

Just that is at the bottom of the trouble in coal—there are so many mines and so many miners that if all of them worked all the time or a year they'd all be out of work for the most of the following year. And with the mine itself closed down so many days for lack of cars or orders or this or that, it is hard to get the miners to feel that they're not also entitled to go easy on the days when their maximum effort happens to be desired, seeing that the result may be "no can work next week."

So it seems to me that Lorenzo's whisper to go slow starts a lot of things, because it is the result of a lot of them. But, altogether, it looks to me as though the root of the matter lies in the steady job—that his willingness to do his utmost daily can hardly be rightly judged until the manager in whom he has the fullest confidence can contrive to tell him—as some employers are now telling him:

"We've got things fixed now so you can go the limit and if we break down or anything happens that we should have prevented, you fellows should worry—we go on with your wages—from now on nobody around here is going to be able to 'produce' himself out of a job."

The coal matter will not be fixed up properly until something like that is said to the miners even though saying it will take a lot more serious study of coal than a commission to fix wages and hours. Neither will any other line of industrial production be properly fixed until something like that is done—following a much more serious study of all the factors than any agreement as to wages and hours or even any nation-wide plan for the adjustment of superficial grievances.

I believe that what Lorenzo wants most is a steady job. It would seem as though we could all get together on that, for every manager and every capitalist I know will say that he, too, wants nothing better than a chance to give him a steady job as the result of the factory's steady operation. When these three investors of "brawn, brain, and bullion" sit down to talk about steady operation as the real down-to-the-ground essential of more production, they will probably ask us customers to sit in with them and shoulder our share of the responsibility. Those of us who insist on ordering left-handed plows may be asked to get them all of one make, so the others won't have to bother to turn out just a few. Our wives may be asked—will it be in vain?—to lessen the extremes of their styles which now over-work thousands for a short season and out-of-work them for a long one. We men may have to agree to lessen our choice of patterns so the woolen mills can give their full time to them. All of us will be asked to regularize our orders so as to regularize operation so as to regularize the job for workers who, I fully believe from observation, take more pleasure in going hard than in "taking easy," and who will give themselves the pleasure—with the satisfied self-respect—which goes with good work, if they can be *sure* of a *steady* chance at that pleasure.

Something like that kind of teamwork between all of us is about the only kind of counter-propaganda which can be expected to break down the pernicious "Lotsa time" propaganda. The pernicious type is founded on fear—fear which results from the every-day experience of men who think

little but observe much, fear which is not allayed by the economist's calm assurance that in the course of a generation or so everything will work out nicely.

But the employer isn't the only one to blame for this fear, by a long shot. The public makes the wise manager fear that he, too, may produce himself out of his position by piling up goods which a fickle consumer may leave on his hands because the styles changed over night. The wise capitalist has to fear that his "over-head" may eat up his legitimate reward if he banks too much upon a steady demand and so lifts all the risk off from his workers and puts it into his inventory. The public, if it is wise, will do its fearing when any of these three is seen to be "going easy," because fear is probably at the bottom of it and fear is sure to result from it—fear of higher prices for the consumer and fear for daily bread for the producer.

All of which is about as far as possible from our present highly popular indoor sport of trying to get things done in time to save the world from bankruptcy by sitting down and saying:

"Take it easy—what can *we* do as long as the *other* fellow is soldiering, or profiteering, or Bolshevizing"—etc., etc.

After my seven months—and my other years—"I'll say" we're all, from top to lowest bottom and back again—including the other fellow—a bunch of fine chaps—all trying to play the game pretty fairly as we understand it. If we'd only try harder to get acquainted, we'd start a counter-propaganda of confidence that would turn out the stuff and make us all happy again.

Coöperation and Prices

By EUGENE H. PORTER, PH.D.

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MR. ALBERT SONNISCHE, in his recent admirable book on *Consumers' Coöperation*, describes the essential purposes of consumers' coöperation.

First of all, the immediate purpose of consumers' coöperation is the production and supply of goods for the use of its own members primarily. To accomplish this end the necessary machinery must be acquired and set in motion; stores, factories, land, etc. All this property acquired gradually, as it is needed to supply the increasing membership, is owned collectively by the members, each having an equal share. Social partnership takes the place of private ownership; social profit takes the place of private profit. Again, the management of all the operations of the property each member shares equally. Each has a voice in the control. Finally, membership is open to all comers regardless of sex, creed, race or association. Potentially membership includes all society—it is all conclusive. Consumers' coöperation is essentially a social movement for the interests it represents and permeates all society.

SCOPE OF CONSUMERS' COÖPERATIVE MOVEMENT

Here in a nutshell is the creed, the primer and guide of the consumers' coöperative movement as taught and firmly held by its most consistent and earnest leaders. Its field is limitless, its principles are clearly defined, its purpose determined—finally substitute a new economic and social system for the old. It is not political and is evolutionary in character. When those twenty-eight weavers of Rochdale in 1843 opened their little coöperative store and formed the first real

consumers' coöperative organization they did so from stern necessity to escape the heavy burdens imposed by a ruthless economic system. Other forms of coöperation, agricultural, credit unions and banks have originated and developed for the same impelling reasons—a determination to be freed from the unreasonable exactions of the trade. The primary cause was practically the same in all the forms of coöperation, but there is a vast difference in final aims and purposes. Some of these differences will be considered in connection with agricultural coöperative societies.

The death rate among the various coöperative attempts for the past century has been always high. There have been many dreamers who perceived in coöperation a remedy for most human ills if only their particular system could be made universal. But the indifferent success or utter failure of most of these schemes has created some suspicion of the permanent stability of such enterprises. Moreover, it may be added that the history of coöperative enterprises serves to teach that the doctrine of universal brotherhood does not in itself promise either persistency of effort or efficiency in accomplishment. Is "Consumers' Coöperation" to be the solution of the problem? Is it to conquer the world's industry and write a new history of economics, or will it be simply a powerful factor in the making and distribution of wealth?

MATERIAL GROWTH OF CONSUMERS' COÖPERATIVE MOVEMENT

Before we attempt to answer these questions let us see just what the consumers' coöperative movement has done in the seventy-seven years that have elapsed since the humble beginning at Rochdale. It will of necessity be a brief record and deal mainly with material growth. It must be understood that all the local associations joined in forming a central organization, the Central Wholesale Society, and this was done in both England and Scotland; in 1843 one store and twenty-eight members; in 1913 the membership has passed the three million mark in England, or about one-fourth of the population, counting each member as the head of a household. Germany had 1,800,000 members; Russia 1,400,000; France 900,000; Austria 500,000; Italy and Switzerland each 250,000. The rest of the 10,000,000 members were distributed among smaller countries. In the same year sixteen national wholesale societies did a business of approximately three hundred million dollars.

History records the paralyzing and destructive effect of war upon all forms of established industry. Advancing from 1913 to 1918 it will be interesting and instructive to note what happened to the consumers' coöperative enterprise during that fateful period when the cause of liberty trembled in the balance and the greatest war inscribed in the annals of the world was fought to a finish. The British Wholesale Society in 1915 had its sales increase to over \$215,000,000, an increase of over \$40,000,000, or 25 per cent. The Scottish Wholesale Society increased 21 per cent. But

the total sales for the British Wholesale Society for 1918 were about \$326,000,000, and its Scottish partner kept equal pace. In fact, the volume of business of the English just about doubled during the war. The membership for all of Great Britain, now about 4,000,000, indicates an increase of one million heads of families during the war. In Germany the membership increased 450,000, while the volume of trade jumped from 493,000,000 marks to 607,000,000 marks in 1917. The Wholesale Society had its saving deposits increase from 22,000,000 marks in 1914 to 72,000,000 marks in 1917. The Hungarian Wholesale Society in 1917 did a business of nearly 88,000,000 kroner as against a little more than 30,000,000 in 1914; while four hundred and seventy societies were added and the membership increased by 300,000. A business of a little more than 45,000,000 francs was done by the Swiss Wholesale Society in 1914. The same society in 1918 had a turnover of 130,000,000 francs. It also owns and operates the biggest flour mill in Switzerland. Its membership increased from 287,704 to 324,928 in 1917. Sweden's Wholesale Society grew in the importance of its transactions from 9,900,000 kroner in 1914 to 21,800,000 kroner in 1917. The membership increased in the same period from 111,000 to 177,000. The record of Russia may be justly termed unique. In 1918 there were nearly 20,000 consumers' societies in that country, with a membership of about 15,000,000 heads of families. The Russian Wholesale Society in 1913 did a business of less than \$4,000,000; in 1918 its turnover was 2,000,000,000 rubles, which would be a billion dollars at the normal

rate of exchange. It may be added on the authority of Mr. Sonnischen to whom I am indebted for these statistics that 51,000,000, out of a total population of 76,000,000 in Central Russia are served by coöperative institutions.

Ventures in Coöperative Production

Ventures Abroad.—In addition to this narrative of increase of members and business one other important matter merits notice. It is the notable development and general success of ventures made in coöperative production. It is quite impossible to enumerate all the various fields of industry that the British Wholesale Society alone has entered. Suffice it to say that it has five clothing factories, eight great flour mills, some of the largest in the world, great soap works and nearly a hundred other lines of manufacturing. It also has creameries in Ireland, tallow and oil factories in Australia, bacon factories in Denmark, great tea plantations in Ceylon and India, wheat fields in Canada and a fleet of ships upon the sea. So much for coöperative effort and growth across the sea. It may be frankly admitted that these figures are somewhat staggering. Should such a growth continue, coöperation will complete its conquest of Europe within the next ten years. However, it is very doubtful if any such rapid advance is made. In the judgment of many keen observers the movement will inevitably develop well defined limitations which will be difficult, if not impossible to pass. Moreover, the great size the organization, as already attained, will force to the front some very troublesome and momentous questions which may involve in their settlement the

very existence of coöperation on any large scale.

Ventures in the United States.—For the United States the tale is much shorter. Consumers' coöperation has advanced falteringly in this country, although singularly enough in 1844, about the time the Rochdale pioneers started, a tailor in Boston originated a coöperative buying club, which a little later became the first coöperative society in the United States. It is difficult, if not impossible, to give an idea of the present status of coöperation here by means of figures. Reliable statistics are not available, but there are now listed some 3,000 American coöperative societies, most of which are probably in existence. But these are not all simon-pure consumers' organizations. There are centers of activity in California, Illinois, Minnesota, Wisconsin, Pennsylvania, the Dakotas, Oregon and in New York, the home of the Coöperative League of America. We have not much to show compared with results abroad, and the future development of the American consumers' coöperative movement is difficult to determine. However, I believe it is firmly rooted here; is sure of a steady and sturdy growth and will become, in time, an important and influential factor in our industrial life. With some trepidation I will venture the statement that it hardly seems probable that it will either advance as rapidly or be able to reach, at least within the near future, a position of such authoritative power and influence as has been possible for some of the societies over the sea. The conditions here are very different from those existing in the old countries. Our habits and ways of thought, and house-

hold customs are different. Then, too, this is not a "tight little island" but the sweep of a continent across thousands of miles; our population as a whole is not compact; we are not as homogenous a people as some other nations; our thousands of farms create a strong and increasingly powerful agricultural interest and finally we do not, like England, import a large proportion of our food. These are some of the reasons why it seems to me that the consumers' coöperative movement in this country should be studied with very special reference to its relationship to other forms of coöperation. This is absolutely essential if we are to get anywhere in the attempt to better present trade conditions. It is true that Sonnischen insists that pure consumers' coöperation cannot endure matrimony and must always trot in single harness, but while that may be very logical it is not always expedient to push logic too far, because, if consumers' organizations are not yet as vigorous as we might wish, there is a form of coöperation that is growing here with phenomenal rapidity and already possesses the proportions of a young giant. The name of this lively youngster is Agricultural Coöperation.

AGRICULTURAL COÖPERATION

The troubles of the farmer have been, in a great measure, those affecting the consumer. Unorganized, he remained isolated, helpless and unprotected at the mercy of selfish and thoroughly organized interests whose operations, although of a semi-public character, are generally unregulated. It will hardly be disputed that at the present time industry is completely

dominated by large aggregations of capital. This thorough organization and equipment of business with increasing legal protection are gradually eliminating competition. But capital has not concentrated on agriculture. Therefore, it is inevitable that the problems created by this concentration and power of capital and its relationship to all concerned have become the leading questions of public policy. The most serious questions that confront us today are no longer political, they are mainly economic. With the growth of cities and towns came a steadily increasing demand for the products of the farm and it is of the greatest importance to the prosperity and welfare of us all that the distribution of these products shall be accomplished with the greatest possible efficiency and with the smallest possible cost. Experience has shown that the existing agencies, free from control, are likely to become predatory and exploit both producer and consumer. The farmer has a deep-seated conviction that acting alone and single handed he pays the highest price for what he buys and gets the lowest price for what he sells, and it must be admitted that the evidence sustaining this opinion has not been controverted. For years the farmer has felt that there was too great a difference between the price paid the producer and the price paid by the consumer. For many years earnest and sometimes violent efforts have been made to improve agricultural conditions with failure as a result, because of lack of adequate comprehension of the economic and social questions involved. As in other forms of coöperation, many organizations styled coöperative were

formed, led brief, precarious lives and ceased to be. Few of these enterprises were founded on right principles and many of them tied up with moral, social or political questions. Many were formed by impractical zealots, full of ardor but lacking sense. But much was learned from these failures, costly as they were. One important lesson was that business principles and not sentiment must control, and that the doctrine of brotherhood does not in itself constitute a stable foundation.

Coöperative Business Methods Essential to Farmers

It became apparent that coöperative business methods for farmers are essential if they are to hold their own in the broad field of national economy. This implies at once the ability to continue with others for desirable purposes impossible to be reached by an individual. So within the past twenty-five years agricultural coöperation has entered upon a career that at this time seemed to promise a most signally successful accomplishment. But it is well to remember that although great progress has been made it is like consumers' coöperation abroad, not yet entirely escaped from the experimental stage. Its record of achievement shows the organization of the citrus fruit growers of California, the potato growers of Maine, Maryland and other states, the apple men of Oregon, the melon raisers of Colorado, the cheese and butter makers of Minnesota, Wisconsin, Iowa and a score of other states, the onion growers of Texas, the wheat men in the great wheat area, live stock associations, breeders' associations, dairymen's

leagues, cow testing associations, egg associations, fruit growers' societies and societies for buying supplies. All these run up to very many thousands of organizations doing a yearly business of hundreds of millions of dollars. One striking organization is the farmers' union with societies in twenty-three states and a membership in 1917 of over 3,000,000. It then owned 1,600 warehouses in the southern states for cotton alone.

This outline of achievement, even if brief and inadequate will, however, give a pretty definite notion of the magnitude of the business controlled or directed by agricultural coöperation. Moreover, it must not be forgotten that Rochdale principles of operation largely govern the great majority of these organizations.

Comparison between Consumers and Agricultural Coöperation

These two great divisions of coöperation, consumers and agricultural, are identical in purpose when engaged in the business of buying commodities for distribution among members, but when agricultural societies act as collective selling agencies the lines diverge. The consumer in buying collectively aims to eliminate the expense and profit of the middlemen, and even of the manufacturer when possible, and thereby reduce the cost of living. In other words, he proposes to add to his savings the eliminated profits. The agricultural societies, in collective selling, desire to obtain a fair price for their products and to reduce the expense and profit of the middlemen to reasonable proportions and so to add a decent amount to their savings. Both desire to increase in-

come—the one by collective selling the other by collective buying.

So far as figures are available it seems probable that the agricultural coöperative societies have in some cases reduced the price to the consumer and at the same time improved the quality. In other cases where the price has increased, the quality has become standardized, and in all these cases the goods have moved through the ordinary channels of trade. There has been little direct dealing as yet between producers' and consumers' societies. One of the distinct advantages to the consumer is the ability of producers through organization to ship goods of uniform quality and standard grading. Producers are now ready in many cases to deal directly with consumers. It is one of the ways out. Harris says, "What consumers need to do is to assure control of the final steps of distribution and

manage them in their own interest as efficiently as these producers are conducting the initial stages of distribution. Moreover, to worry about what will come to pass when producers finally join issues at the halfway point between source and destination of products is to cross a bridge which is a very long way off. Meantime, consumers can afford to bid Godspeed to coöperative producers."

COÖPERATION AND THE INDUSTRIAL SYSTEM

Our present business methods will continue with coöperation in its various forms. As the strength and growth of coöperation continues it will exert an ever increasing influence on the industrial system and the greater the power the greater the corrective influence will be. Coöperation is of the very essence and spirit of true democracy and it can never die.

Plans for Extending Coöperative Buying and Selling in the United States

By O. S. BEYER, JR.

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THE promotion of the All-American Farmer-Labor Coöperative Commission by the progressive labor and farmer organizations is the outcome of a growing conviction on the part of these influential groups that there is little hope of bringing down the cost or improving the standard of living for the large mass of workers and farmers by the conventional methods advocated by the spokesmen of the existing order. The unions and societies which are behind this national coöperative movement are organized primarily for furthering the economic interests of their members. In the past their concern has been largely with securing a fair return for their produce, whether hours of work or bushels of corn. Long and bitter experience, however, has taught them that the present economic system works in such a way that the increases in the returns which they are able to secure for their commodities invariably lag behind increases in the prices of necessities. They have become convinced that either radical changes must be made in the prevailing economic system or a new kind of system built up before forces are created which will bring about a gradual reduction in or stabilization of prices.

The organizations supporting this commission attribute the existing price tendencies directly and indirectly to the necessity of maintaining a margin in the form of interest, dividends or

profits in all undertakings which render a service to the people, whether financial, commercial or productive. The motive behind this necessity, they maintain, fosters, among other ills, a continuously growing economic overhead. The non-producers of society are growing at the expense of the producers. In other words, the competitive system is becoming commercially top-heavy. As it does so, the scramble for as large a profit margin as possible becomes more and more intense. The main purpose for which individuals and groups really work, the production and distribution of the necessities of life, they maintain, in the present scheme of things, becomes secondary in importance, providing it is not entirely perverted. As incontestable evidence of this tendency, they point, for instance, to activities similar to that of the Sheffield Farms Company, a milk distributing agency of New York City, when it urged the farmers to limit milk production, in order, it seems, that prevailing price levels be not disturbed. The frequent wasteful disposal of food products for the sake of maintaining prices, the pressure brought to bear on the War Department not to dispose of its surplus food stocks, the immediate pyramiding of commodity prices to the final consumer when relatively small increases in the cost of labor per unit of production become necessary, are all marshalled as proof that a

thorough revision and redistribution of responsibility for the functions of our economic system are in high order. They are convinced that a new motive must replace the present profit motive of our commercial, agricultural and industrial activities.

WORK OF ALL-AMERICAN FARMER-
LABOR COÖPERATIVE CONGRESS

Elimination of Profit Making

This new motive they conceive to be direct non-profit service. They propose to foster it by coöperative methods. The element of profit-making in the transactions of men and their organizations must be eliminated.

As the first step in the process for bringing about the desired object, the combined organizations supporting the commission convened the All-American Farmer-Labor Coöperative Congress in Chicago, February 12, 13 and 14, 1920. This congress was composed of delegates from labor, farmer, and coöperative organizations all over the country. It heard addresses and committee reports and engaged in discussions of all the important phases of the coöperative movement.

Organization of Credit Unions

In the interest of coöperative financing, banking and credit, the committee on this subject specifically recommended the establishment of credit unions and workers and farmers' coöperative banks, as the inaugural movement for gradually securing proper control of credit. The formation of these credit unions and banks is to be entirely in response to local requirements wherever they arise. These institutions are to be used for meeting the credit needs of new and going coöperative enterprises, and of

farmers and workers who need help to get established or to improve their usefulness. Further, the committee proposed that the existing banking laws and regulations of the various states and the nation be followed in the establishment of these banks, except that they be organized on a strict coöperative basis, and that the interest returns be restricted to the lowest possible, 6 or 8 per cent. In states where the organization of credit unions is not possible, owing to existing legal limitations, the committee advocated the passing of laws lifting these restrictions.

The extent to which these individual banking enterprises should eventually link themselves together for wider coöperation and control of the national credit was not widely discussed. It was recognized that the interrelation of individual coöperative banking institutions had to be a distinct growth and could not very well be predetermined at this early stage of coöperative finance.

*Principal Phases of Coöperative
Distribution*

The next set of reports and discussions had to do with the principal phases of coöperative distribution. They dealt with the principles and details in the organization and management of coöperative wholesale and retail stores. The Rochdale system of coöperative stores was indorsed. A rather rigid system of bonding and supervision was also advocated to insure against the possibilities of profit making in the coöperative distributing machinery. Particularly was the importance of developing methods of direct trading pointed out.

Action was taken, looking to the systematic development of this phase of the movement.

Revision of System of Industrial Management

The commission and the congress further recognized that the entire system of control and management of industrial establishments under coöperative enterprise will have to be revised. The capitalistic control of industry has developed a type of industrial management which is distinctly militaristic and autocratic. If the maximum is to be secured by way of the greatest possible efficiency and economy in production, then coöperative industrial establishments must be so administered that the workers in these establishments become a genuine part of the living organisms which actuate them. The farmer and labor organizations are clearly aware of the vast savings which become possible when the full interest and thorough coöperation of every worker in industry is secured. They see that these savings can only then be secured when the status of the individual worker is changed from that of a mere wage earner to a coöperative producer, working in a democratically controlled plant. So they most seriously considered the new type of democratic industrial management which must be devised for the control and administration of coöperative factories, large stores, packing plants, mines and similar centers of operation. The congress authorized the creation of a committee composed of technical experts to study this subject and, if possible, to supervise a development endeavoring to embody the fundamental principles involved.

Education, Publicity and Legislation

The subjects of education, publicity and legislation, as required for the adequate promotion of the movement, were also discussed. It was clearly recognized that sound education and stimulation were of basic importance to real success. Provision for accomplishing these particular purposes was made.

FUNCTIONS OF ALL-AMERICAN FARM LABOR COÖPERATIVE COMMISSION

It is not intended that the work of the commission is to find expression only in the transactions of the annual congress. One of the most important actions agreed upon concerned the organization and permanent administrative functions of the commission. The functions which it is hoped will gradually be assumed and developed by the business organization of the commission include the active guidance, coördination and supervision of all types of coöperative enterprises. The necessity for assuming a measure of responsibility for such activities is in response to a spontaneous demand which has arisen as a result of the many individual and isolated coöperative enterprises already started. It is expected that these administrative and supervisory functions will be analogous to the functions performed for the present capitalistic financial and distributing system by such agencies as the different credit rating houses, bank clearing houses, produce exchanges, boards of trade, and chambers of commerce.

The conclusion should not be reached that these farmers and workers propose to set up an economic system absolutely independent of and unrelated

to the capitalistic system as it exists and functions today. If any such attempt were made, it is quite certain that it would fail. Rather is it proposed to start coöperative enterprises, stores, banks, and shops, in a small way and in response to local needs in environments which presage, by their characteristics and the temper of those who are to be served, a reasonable prospect of success. The inhibition and limitations imposed by the prevailing system are recognized. However, the coöperative movement cannot ignore them, but must, in its evolutionary stages, adjust itself to them. The modifications in social psychology, which are necessary before the movement can have an appreciable effect on the costs and standards of living, must be slow and genuinely a part of the masses who are to be benefited.

Furthermore, the business-like and systematic approach to the many problems which present themselves for solution reveals that there is not only a thorough realization of the size of the job but also that there is a thorough understanding of the fundamental differences in the new economic system with which it is gradually hoped to replace the old. The necessity for and great importance of the technical expert to help in the inauguration and management of the many phases of the movement were repeatedly emphasized in the reports and during the discussions of the congress. The representatives of the workers and farmer organizations delegated as the officers of the commission are quite similarly aware of this, and in their detailed plans for the business organization they are not

overlooking the functions of the skilled adviser and manager.

It is, of course, too early to state what effect an attempt at a concerted movement such as this one, inaugurated by the progressive wings of the farmer and labor organizations, will have on the levels of commodity prices. There are, today, many individual coöperative enterprises under way. They have mostly been organized by labor and farmer organizations. They are all working practically independent of one another. Many of them are distinctly successful, others are managing to keep going, while some are having serious difficulties.

SERVICE VERSUS PROFITS

As it becomes possible to coördinate these individual attempts, the coöperative movement will of course extend farther and farther into the outlying realms of distribution and production. With the ideal of service substituted in place of that of profits, distinct forces will be released which should have an ever increasing effect on price tendencies. If the growing popularity of the coöperative movement, undoubtedly stimulated largely by the existing chaos in commodity prices, is any sign, if the business-like approach to the entire problem of bringing about the national promotion and coördination of coöperative finance, distribution and production by the labor and farmer organizations is an indication it should not be unwarranted in concluding that this movement holds out about as much hope as any so far inaugurated to reduce the cost of living and eventually make possible improvements in the standards of living.

Foreign Exchange, Prices and the Course of International Trade

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FROM July 1, 1914, to December 31, 1918, the United States exported \$22,974,000,000 of merchandise (and silver) and imported \$11,166,000,000, giving an excess of exports amounting to the sum of \$11,808,000,000, an average of \$2,624,000,000 a year. This huge balance, in four and a half years of war, is equal to the sum of our annual trade balances from 1873 to 1914.¹ Our enormous exports were due to two interrelated causes, the war demands of Europe² and the

¹ Excess of exports, 1873-1914, \$11,754,-849,000.

² During the fiscal years, 1914-19, Europe took of our total exports the following percentages, 63, 71, 69, 69, 63 and 64. Of these exports to Europe the following percentages were taken by our four principal Allies—the United Kingdom, France, Italy, and Belgium: 60, 75, 82, 79, 93, and 85. During the same period the United Kingdom alone took from 40 per cent to 53 per cent of the total exports to Europe. The following figures show our trade balances with our principal Allies in recent years, as compared with 1913, the first full year before the war. The figures are for calendar years.

EUROPE			
	1919	1918	1913
Exports.....	\$5,185,980	\$3,858,705	\$1,499,572
Imports.....	750,569	318,127	864,986
Excess of exports.....	\$4,435,410	\$3,240,578	\$634,586

UNITED KINGDOM			
Exports.....	\$2,279,178	\$2,061,300	\$590,732
Imports.....	309,189	148,614	271,954
Excess of exports.....	\$1,969,988	\$1,912,686	\$318,778

great rise of export prices.³ After the armistice, our excess of exports continued without abatement, despite the unpegging of the exchanges in the spring of 1919 and their subsequent pronounced depreciation. The calendar year 1919 showed exports of \$7,922,150,000 as against \$6,143,392,000⁴ in 1918, and imports of \$3,904,-

FRANCE			
Exports.....	\$893,368	\$931,199	\$153,922
Imports.....	123,871	59,509	138,933
Excess of exports.....	\$769,497	\$871,690	\$14,989
ITALY			
Exports.....	\$442,676	\$492,145	\$78,675
Imports.....	59,048	24,340	55,322
Excess of exports.....	\$383,626	\$467,805	\$23,353

³ The following comparison of indices of export prices for 100 articles, quantity and total value of domestic exports, shows that the increase in our exports was much more an increase in values than in quantities:

INDEX NUMBERS			
	Quantity of Domestic Exports	Export Prices of 100 Articles	Value of Domestic Exports
1915.....	122	101	123
1916.....	157	122	191
1917.....	171	163	279
1918.....	125	210	261
1919.....	140	227	317

(See W. A. Berridge, Analysis of the Merchandise Exports from the United States, *Review of Economic Statistics*, October, 1919, p. 312.)

⁴ This figure does not include exports on government account to the American Expeditionary Force.

406,000 as against \$3,031,304,000 in 1918, giving a favorable trade balance of \$4,017,744,000, the largest in the history of the United States. Prior to the entrance of the United States into the war, and before the imposition of the European gold embargoes and the various arrangements for exchange stabilization,⁵ these enormous merchandise balances induced an unprecedented drainage of gold from Europe to the United States, the net excess of our gold imports to December 31, 1918, being \$1,029,000,000. Concurrently with the diminution of gold holdings⁶ in the European belligerent countries went an astonishing

⁵ Of the arrangements for exchange stabilization, the mobilization of American securities in Europe for that purpose, the series of private loans directed to the same end (of which the Anglo-French loan is the most familiar) and the subsequent direct advances by our government to the Allied governments, it is unnecessary to speak in detail in the present article.

For a detailed statement of our war-time balance of international payments, inclusive of the "invisible" items, see my article on "The Balance of Trade of the United States," *Review of Economic Statistics*, July, 1919 (co-author with C. J. Bullock and R. S. Tucker).

For an analysis of our war-time trade and exchange relations with Latin American countries, see my article on "Latin American Foreign Exchange and International Balances During the War," *Quarterly Journal of Economics*, May, 1919, pp. 422-65.

For an analysis of our balance of international payments in the calendar year 1919, see my article on "The Future of Our Foreign Trade: A Study of Our International Balance in 1919," *Review of Economic Statistics*, April, 1920 (co-author with Frank A. Vanderlip).

⁶ Curiously enough, however, in spite of the heavy depletion of the total gold stocks in the European belligerent countries, the gold reserves held by their banks actually increased by about one-third during the war—from \$4,000,000,000 to \$6,245,000,000—owing to the concentration in these banks of gold formerly in circulation,

increase in their paper money in the shape of inconvertible notes. The increase (inclusive of Russia) has been about twenty-fold.

In consequence of these abnormal conditions—our huge trade balances, the drain of gold from Europe, the gold embargoes, the large issues of paper—Europe⁷ was for the greater part of the war, and still is, off the gold standard, and we have in the European exchanges a condition of "dislocated exchange."

This situation brings up for renewed discussion a fairly familiar problem, which has been considerably talked about of late, but of which there has been comparatively little study of a statistical character—the problem of international trade under a régime of depreciated inconvertible paper money. How, under conditions of inconvertible paper money, do changes take place in exports and imports? The answer to this question involves a consideration of the relation between the foreign exchanges, prices and the course of international trade.

INTERNATIONAL TRADE AND MONETARY SYSTEMS

Gold Standard Countries

We may best state the problem by first reviewing, briefly, the normal case for gold standard countries. Summed up baldly, the bases of the usual statement of the theory of international trade and foreign exchange are as follows:

1. The trading countries are on a gold basis.

etc. (See the *Financial and Commercial Review of the Swiss Bank Corporation for 1918.*)

⁷ Except in the neutral countries.

2. Through the mechanism of the "gold points," gold flows freely between the trading countries.

3. When gold flows out of a country the level of prices within that country falls and, in consequence, exports increase and imports diminish; and conversely, when gold flows in, the price level rises, so that imports are encouraged and exports discouraged.

Given this mechanism, a disturbance of the balance of international payments, as for example, an increase in borrowings, will set the machinery in motion and effect a change in the merchandise imports and exports.

For example, let us imagine an interesting, though of course impossible case. Abstracting from other factors, let us imagine what would have happened, according to theory, had Europe remained through the war on a gold basis. Our large favorable balance of payments, in which the heavy merchandise exports were, as said, the dominant item, would have turned the exchanges against the European belligerents. The excessive supply of bills in New York, representing the exports, would have driven sterling, for example, to a discount—to say 4.83. It being cheaper, at that rate, to ship gold and bear transportation, interest, and insurance expense thereon than to sell sterling bills at the discount, gold would have flowed from England to the United States, prices would have fallen in Great Britain and risen in the United States. Under these changed price conditions England could export more than before and the United States less.

Only to state the case shows how impossible it is, and illustrates how little application a theory of normal

trade has to such abnormal conditions as those which obtained in the late war. Europe *had* to continue to buy from us. The drain of gold, far from lowering the European price levels, was accompanied by rapidly rising prices. Then came the cessation of gold exports from Europe, the abandonment of the gold standard and a still further elevation of prices—this time of *paper* prices. Throughout, our heavy exports continued, despite rapidly rising prices here, and despite the depreciation of exchange—exports for which Europe could not pay, except with credits out of the pockets of the United States to the sum of about \$10,000,000,000.

Even today, the situation is but little changed, though of late months our exports show some indications of falling off, and European exports, at least those of Great Britain, show most hopeful signs of recovery. Eventually, however, the trade balances will be righted. This has been so freely, and for so long, predicted as scarcely to require detailed exposition. It is not to be expected, however, that, except perhaps in the case of Great Britain, there will be a return to the gold standard in the immediate future. How, then, are these trade changes to take place?

German Reparation Payments

We have to ask ourselves the same question with regard to the German reparation payments and their effects upon international trade. Germany is to make payments which will amount, when fully assumed in 1926, to about \$750,000,000 a year. Such large remittances will undoubtedly dominate the German balance of

payments and result in a great expansion of German merchandise export and a large excess of exports over imports. In other words, Germany will make the reparation payments with the only means at her command—with goods. But Germany is suffering a régime of depreciated paper. With some 50,000,000,000 marks of paper notes in circulation and the mark exchange at about one cent, it is not to be expected that Germany will resume the gold standard for at least a considerable period.

Effects of Exchange Depreciation

How, then, in all these cases, with the usual gold points of exchange, gold movements, and the consequent changes in price levels which in the theory for gold countries bring about trade changes, are these large changes in exports and imports to come about? The answer to this question has usually been that depreciating exchange operates as a "bounty" to exporters (of the country whose exchange is depreciated) and as an added burden upon importers. The question as to just what constitutes this bounty and this burden has presented great difficulty, and has called forth various solutions. The exporter, it is said, receives payment in the form of a foreign bill calling for foreign gold money. Let us say he is a German exporter to the United States. He receives for his goods a bill in dollars. This bill he sells for marks. With marks at one cent he gets 100 marks per dollar, instead of about 4 marks, as when the mark was at par.

This answer is, of course, the superficial one. It implies that the goods to be exported cost nothing in Ger-

many, or at least no more than before. The explanation of the theorist, therefore, has usually been somewhat different. His explanation has usually been that when a country's exchange is depreciating, the depreciation of the exchange keeps pace with the depreciation of the paper currency in terms of gold, that is, with the gold premium, but that a gap appears between these two and the general price level. General prices do not rise so fast as the gold premium or rate of depreciation of exchange, so that the exporter buys in Germany at the general price level and sells to us in dollars, converts his dollars into marks, and secures an extra profit or bounty, measured by the gap between the general price level and the rise of the gold premium, or extent of depreciation of the mark in exchange.

International Price Levels

General Price Levels and Depreciating Currency.—But this answer still presents difficulties. With expanding exports and increased supplies of exportable products being sought for export, do the prices of exportable products remain only on a par with the "general price level?" The "general price level" is made up of numerous items. It contains both export prices and domestic prices. What would interest the exporter, in this comparison as stated would be not the "general price level," but export prices. How do these compare with the gold premium and the exchange rate? Taking account of this distinction, a refinement of the original statement has been put forth, namely, that while export prices do tend, under conditions of depreciating paper, to rise higher

than the "general price level," they do not rise so high as the premium on gold (depreciation of exchange), so that there still remains a "gap"—this time between the prices which the exporter pays for his goods and the value in marks of his bill of exchange in dollars. This "gap" constitutes an extra profit or bounty to the exporter.

These are representative views of those who hold that depreciating paper currency stimulates exports and discourages imports. On the other hand, there are some who have contended that depreciating paper has no such effect. To cite one distinguished example, J. M. Keynes, as a result of his investigation in India, denied that depreciation of the Indian exchanges operated as a bounty to exports.

General Versus Specific Depreciation.—Professor J. Shield Nicholson, the British economist, endeavors to reconcile these conflicting opinions, and ascribes the difference of views to the failure to distinguish between what he terms *general* depreciation and *specific* depreciation. To quote from his recent book *Inflation*:⁵

The general rise of prices in this country (England) is the same thing as a general depreciation of the pound sterling. . . .

Under normal conditions of trade, the general levels of prices in the different countries, that are effectively on the gold standard, tend to conform to the general world level of prices. There are, of course, differences owing to cost of transport, tariffs and the like, but there is a general conformity.

If in any one country prices were to rise to an exceptional degree, that would amount to a general depreciation of its currency compared with gold—the standard of world prices. Imports into this high-priced country would in-

crease, exports would fall off and there would emerge an adverse balance of trade. This adverse balance might be met for the time by the export of gold or of securities, or by borrowing abroad, or by deferred payment, etc., but if the cause persisted, if the price level of the country in question remained relatively high, then its currency would fall below the par level with other currencies. That is to say, the *general* depreciation would be followed by or associated with a *specific* depreciation. The specific depreciation is measured by the fall in the foreign exchanges.

It is Nicholson's view that this difference between the *general* depreciation and the *specific* depreciation would operate as a stimulus to exports and a discouragement of imports.⁶

World Price Level.—Upon Nicholson's statement of the matter two comments may be made. In the first place, his phrase "the general world level of prices," and his characterization of the "general levels of prices in the different countries" as tending "to conform to the general world level," barring such minor differences as cost of transport and the like, appear to me unhappy for his purpose, because capable of an interpretation which he perhaps did not intend. It is true that there is a world level of prices in the sense that at any given time the price levels in different countries stand in a certain relation to each other, and that, given the free flow of gold, the stocks of gold coming annually from the mines tend, theoretically, to distribute themselves among the countries of the world in accordance with the shiftings of their balances of international payments and with the play of reciprocal demand. The phrase "world level of prices," however, con-

⁵ For his fullest and clearest statement on this point see *The Economic Journal*, December, 1916, pp. 429-30.

⁶ London, 1919, pp. 69-71.

notes, for me at least, a tendency of national price levels to conform to an equality, a connotation which unhappily is strengthened by Professor Nicholson's allusion to the minor differences due to the cost of transport, tariffs and the like. It is a commonplace observation that before the war, to take a normal case, the price levels of different countries were widely divergent, and that they had been so for generations. The price level in the United States was higher than that of England, that of England higher than that of Germany and that of Germany higher than that of Italy. These differences were not of so slight a character as to be ascribable merely to differences in cost of transport. They came about, moreover, by reason of that same free flow of gold, and in response to those same shiftings of international balances and the play of reciprocal demand which have been mentioned as governing international price levels.

Factors Governing International Price Levels.—The reason for these enduring differences may be easily illustrated. Suppose that there *were* a general world level of prices, and a general balance in the trade between nations, so that in every country exports exactly paid for imports.¹⁰ Suppose, then, an increase of demand in England for United States tin plate. The trade having previously balanced, this additional export would be paid for by a flow of gold to the United States.

¹⁰ For purposes of exposition, I abstract from other, "invisible," items in the balance of payments, supposing trade to consist solely of merchandise. I abstract, too, from the various banking devices to limit gold flow to a minimum, the object of the illustration being to state a fundamental principle in the simplest terms.

The added gold would raise our price level and lower that of England. In consequence, there would be a gradual stimulation of imports from England (the lower-priced country) to the United States (the higher-priced country), and a gradual check of exports from the United States to England (other than the new article) until the trade between them again came to an equality. Then the flow of gold would cease. But there would no longer be a general world level of prices. England, by the loss of gold, consequent upon the new demand for tin plate, would have a permanently lower price level, the United States a permanently higher price level than before. An obligation to make other payments than those for merchandise would have similar results. If a country has to make remittances abroad—for tourists' expenditures, immigrants' remittances, interest on foreign capital previously invested—it must make the remittance—its international payments having previously balanced—in money. The flow of gold leads to a flow of goods, so that the payments are made ultimately by an increase of exports and a diminution of imports. But the process which brings about these changes in trade is one of lowering prices and incomes in the remitting country and of raising them in the creditor country.

Prices: Domestic and International.—Before leaving this matter of general world price level and national price levels, it should be said that here, as in the discussion of a paper money régime above it is necessary to distinguish between the two sets of prices that enter into the general price levels of nations—between the prices of

domestic goods and the prices of international goods. As we shall presently see, regarding the staple products that enter into general world trade, it is indeed true that they tend to conform to a general world market price. Wheat of the same grade, for example, sells at approximately the same price in Liverpool, whether it be exported from Argentina, the United States, or Russia. These form only a minor part of the general price level, however, and do not destroy the force of the general statement that there are wide and enduring differences in national price levels.

Causes for Trade Changes.—It will be observed, by reference to the quotation from Professor Nicholson's book, that the foregoing discussion of price levels is based on the assumption that the trading countries are on the gold standard. The rise of prices in a country, such as would induce normally an increase of imports and lead to an outflow of gold or securities, is what Nicholson calls *general depreciation*. But if the cause persisted—if the price level remained relatively high, and the deficit in the balance of payments and the drain of gold continued, there would come finally a breakdown of the gold exchange mechanism. The depreciation of exchange, instead of being confined within the narrow limits of the gold points, would become more violent, and the currency of the country "would fall below the par level with other countries." "That is to say, the *general depreciation* would be followed by or associated with a *specific depreciation*. The *specific depreciation* is measured by the fall in the foreign exchanges."

It is the difference, the "gap," as we

have called it, between the *general depreciation* and the *specific depreciation*, which serves as an extra profit or "bounty" to exporters and an added burden upon importers, and thus brings about an increase of exports and a decline of imports. Without stopping to examine the aptness of Nicholson's distinction between *general* and *specific depreciation*, his explanation of trade changes under a régime of depreciated paper is clear. Translated into the terms we have previously used, it is that under depreciating paper currency, the depreciation of exchange (rise of premium on gold) outstrips the rise of the general price level. The "gap," therefore, is the same one which has been set forth by other theorists. It does not even contain the refinement upon this general view that we have mentioned, namely, the distinction between the prices of domestic goods and the prices of international goods, and the comparison of the depreciation of exchange with these latter, instead of with the general level of prices.

GOSCHEN'S THEORY OF FOREIGN EXCHANGE

Over-importation.—Before stating our own view of the problem, we may be permitted to make one further reference to the writings on the subject, namely, to Goschen's analysis.¹¹ Goschen sets forth as a characteristic phenomenon the case of over-importation associated with excessive issues of paper money and depreciation of foreign exchange. He finds among these phenomena a causal connection which he states as follows:

¹¹ Goschen, G. J., *The Theory of the Foreign Exchanges*, 1901 edition.

Probably there are as many cases in which the depreciation of the currency is directly or indirectly the consequence of excessive importations as there are cases in which it is due solely to the errors and bankruptcy of governments. Often both influences are combined, taking alternately the position of cause and effect. Sometimes governments, simply for their own purposes, issue a quantity of paper money; the natural consequence will be over-importation; prices will rise in consequence of the increase in the circulation and accordingly attract commodities from other markets, while the exports having risen also in price will be less easy of sale abroad. Or, over-importation takes place in the first instance, and governments, in order to remedy artificially and apparently what can only be remedied by the cessation of the real primary cause, commit the fatal error of increasing the circulation by an issue of paper money. They think thus to increase the means of paying the debts that are being incurred; but the only effect is still further to increase the evil, *for importation instead of being checked is fostered by such a plan.*¹² *Italics mine.*

Goschen's analysis is endorsed by Nicholson, who says that it "exactly describes our present case." After saying that Great Britain is suffering from over-importation, and admitting that "the imports from America were necessary for the conduct of the war," he adds: "But an increasing part of the aggregate money value of these imports was due to the inflation of the currency and the associated rise in prices."¹³

*Difficulties of Nicholson's and Goschen's
Theory of Exchange Rates*

To the writer, these passages are of especial interest as showing the failure to distinguish consistently between the theory of international trade applicable to gold countries, and the theory which is applicable under conditions of depreciated paper. The crux of these

passages is the declaration that rising prices encourage imports and discourage exports. But this is the orthodox explanation for gold standard countries, whereas both Goschen and Nicholson are applying it to countries with inconvertible paper currency and depreciated exchange. Moreover, this explanation runs directly counter to Nicholson's own earlier view that "specific" depreciation (the condition of depreciating currency and exchange) stimulates exports and discourages imports. In the case of both writers, the confusion is apparently due to the fact that they have witnessed the concurrence of the phenomena to which they ascribe a causal relation—namely, the concurrence of heavy importation, depreciating paper currency and exchange, and a rising price level. But this association, when it has occurred, has been *in spite of*, and not because of depreciating paper and the consequent rise of prices. Few would agree with Nicholson, for example, that during the war the heavy importations of Europe were induced and encouraged by the rising paper price levels and the depreciating foreign exchanges. These importations occurred in spite of the unfavorable exchanges, and in spite, too, of the fact that Europe was unable to make payment, except in credits advanced by the United States. They are sufficiently explained by the necessities of war and of reconstruction. In proof, we have the decline of European imports in recent months, a decline which is quite generally associated with the fall in the European exchanges which became so pronounced last January.

Goschen's analysis, of course, is not concerned with war conditions, yet the

¹² Goschen: *The Theory of the Foreign Exchanges* (Ed. 1901), p. 73.

¹³ Nicholson, *Inflation*, p. 74.

criticism to be made of it is essentially the same. The concurrence which he noted between expanding imports and depreciating paper is to be explained as taking place not because of the rising price level, but in spite of it, and from a quite different cause. A paper money régime is frequently accompanied by a wave of foreign capital borrowings. Under the stimulus of rising prices there is likely to develop a fever of land speculation, railroad building, or some other avenue of speculative expansion by which foreigners are tempted to make investments of their capital. In a sense, the whole situation resolves itself into a borrowing program, for the issues of inconvertible paper are themselves in the nature of a forced internal loan. The point here to be made is that a considerable portion of these foreign borrowings are expended *directly* and immediately in the lending country, and are not remitted by bill of exchange to the borrowers. Such was the case, for example, with Argentine borrowings for railroad purposes in the years preceding the Baring Panic. A great part of the loans was spent for railroad construction materials in England, the same country in which the loans were made. The result, of course, was an expansion of Argentine imports. But this expansion had no direct connection with that series of consequences—exchange rates, prices, value of money—which we are considering; for, as has been said, these imports did not give rise to exchange transactions at all. My analysis of Argentine imports¹⁴ in this period shows that, aside from these

imports of construction goods, general imports did move in accordance with the theoretical expectation. They diminished with the progressive elevation of the premium on gold. And when in 1890 the flow of borrowings ceased, the gold premium meantime rising to 151¹⁵ and finally (in 1891) to 364, the decline of imports was startling indeed. Imports declined 14 per cent in 1890, and another 53 per cent in 1891. Throughout the subsequent years of the paper money period, moreover, the fluctuations of the import trade show a precisely inverse relation to the fluctuations of the premium on gold.

TRADE CHANGES UNDER CONDITIONS OF DEPRECIATED PAPER

We may proceed, then, to the statement of how trade changes occur under conditions of depreciated paper. The general explanation, as we have seen, is to be found in the causal relation between depreciating paper currency, exchange rates and prices, which is of such a sort that when paper is depreciating exports are stimulated and imports discouraged. The particular point at issue is as to the precise nature and workings of this interrelation. It is unnecessary to summarize further the various views that have been taken.

The Case of Argentina

The present writer recently spent about a year in Argentina upon an investigation of Argentine international trade under the régime of inconvertible paper money that existed prior to the passage of the Conversion Law of 1899, which placed Argentina upon the gold standard. It is interesting, there-

¹⁴ Williams, John H., *Argentine International Trade under Inconvertible Paper Money*, Harvard University Press, 1920, Chapter XVI.

¹⁵ Average for 1890.

fore, to point out one or two important differences between the paper money mechanism, as it was found to have operated there upon international trade and the foregoing exposition of its workings.¹⁸

The investigation indicates that both of the general conclusions which appear in the theories which we have reviewed require qualification:

(1) That there is a necessary correspondence between the gold premium and the rate of exchange;

(2) That there is a "gap" between the gold premium (or rate of exchange) and the general price level, or, more carefully stated, between the gold premium and the price of international goods, and that it is this "gap" which operates as an extra profit or "bounty" to the exporter and as an added burden upon importers.

The correspondence between the exchange rate and the gold premium depends entirely upon whether the exchange mechanism in the depreciated paper money country is a gold exchange or a paper exchange. If the exchange mechanism is a paper exchange, the rate of exchange is itself the measure of the premium on gold, for under such a system bills of exchange, giving title to foreign gold money, are bought and sold directly in terms of the domestic paper currency. That such a paper exchange mechanism does not necessarily accompany a régime of depreciated paper currency, however, is proved by the experiences of Argentina. There, throughout the period of inconvertible paper money, 1884-99, a gold exchange

was consistently maintained. Persons having foreign dealings kept a gold account, as well as a paper account, with their bankers, and purchased exchange with gold, which they in turn purchased with paper pesos in the open market, gold balances being settled bi-weekly at the Stock Exchange. Under such a system there are gold points and gold movements to and from the paper money country, which operate in precisely the same way, and from the same causes, as in any gold standard country. The Argentine par of sterling exchange is 47.58 d. Except for a few months in 1884, when specie payments were first suspended, exchange rarely fell below 46 during the whole period of inconvertible paper, notwithstanding the fact that the paper currency depreciated violently, reaching its climax in a gold premium of 364 in October, 1891. The total gold exports for the fifteen years, 1884-1899, were \$90,000,000, and the gold imports, \$158,000,000. In 1888 the net gold imports reached the astonishing total of \$45,000,000, and in 1889 the movement was the other way, the net exports being \$12,000,000.

The size of these gold movements, and more particularly their dates, prove conclusively that they are not to be explained away as representing gold to be used in the arts, or for contracts stipulated as payable in gold coin. In 1888 the fever of borrowing of foreign capital for railroad building and land speculating, which ended in the Baring Panic of 1890, reached its height. Argentina, though then a country of but 4,000,000 inhabitants, borrowed, in 1888, \$250,000,000 of foreign capital. The result was a large favorable balance of payments, a rise

¹⁸ John H. Williams, *Argentine International Trade under Inconvertible Paper Money*, Harvard University Press, 1920, Chapters II and XI.

of exchange to the gold import point, and a heavy inflow of gold. In 1889 borrowings ebbed, Argentina began to feel the burden of the large interest payments due on foreign capital previously borrowed, exchange fell, and gold flowed out. These gold movements were of precisely the same sort, and occurred in response to precisely the same exchange mechanism, as in any gold standard country. And this happened, notwithstanding the fact that the average premium on gold was for the whole period well above 125, and for the first five years of the '90's was well over 200.

It may be admitted that, as regards the exchange mechanism, the Argentine case is rather the exception than the rule; and that usually depreciation of inconvertible paper currency shows itself in a correspondent depreciation of exchange, and the destruction of the gold points. That is, of course, the case with the exchanges of the European belligerent countries at present. It is by virtue of this peculiarity, however, that the Argentine case is worthy of especial examination; for it points to the conclusion that the correspondence between the premium on gold and the depreciation of exchange, and the consequent gap between these two and the general price level, is not the essential feature of the explanation of trade changes in countries on a basis of inconvertible paper money. The significant fact is that whatever be the exchange mechanism, whether a paper exchange or a gold exchange, gold cannot enter into the monetary circulation of the depreciated paper country, but stands always at a premium, whenever and so long as no provision is made for the free conversion of gold into paper

and paper into gold at a fixed rate. Since gold cannot enter into circulation, or serve as a basis for circulation of convertible forms of credit, it cannot bring about those changes in price levels which, in the theory for gold countries, effect changes in exports and imports.

Price Changes in Depreciated Paper Countries

In fact, precisely the *opposite* price changes would occur. In a gold standard country, an increase of remittances to the outside world—such as an increase of interest payments on securities held abroad, or an increase of tourists' expenditures, or of immigrants' remittances—would, if sufficiently heavy, drive up exchange to the gold export point, induce an outflow of gold, and thus *lower* prices. In a depreciated paper country, such an increase of remittances, by requiring more of the domestic paper to be given for the title to gold (whether the purchase be that of a bill of exchange, as in the more usual case, or of gold coin wherewith to purchase exchange, as was the case in Argentina), would lower the value of the domestic paper currency and thus *raise* prices. In the case of a depreciating paper country, which still maintained the gold exchange mechanism and permitted the free movement of gold, the rise of prices would take place as the result of an outflow of gold, which, by lessening the supply of gold in the home market, would occasion a rise of the premium on gold, or, in other words, cause still further depreciation of paper. In the case of a depreciated paper country which had not maintained a gold exchange, but which had been drained of gold or had imposed an embargo on its

export, the same result would ensue, though by a different process. Without any flow of gold, paper would depreciate below its previous value because of the increased demand for exchange occasioned by the heavy foreign remittances to be made, and the consequent rise in the paper price of exchange (the title to foreign gold). This would be the first effect in Germany, for example of such a heavy demand for exchange as that which would be caused by the payment of \$750,000,000 a year of indemnity.

We find, then, in depreciated paper countries, just the opposite price changes from those which would occur, under similar circumstances, in gold countries. And yet, these opposite price changes bring about precisely the same trade changes. An increase of remittances would, in a gold country, lower the price level, stimulate exports and discourage imports. Similarly, in depreciated paper countries, an increase of foreign remittances, though raising prices, would result in an increase of exports and a decrease of imports.

That such is the fact is indicated by numerous instances. The heavy Argentine borrowings of the '80's, to which reference has been made, caused an expansion of imports. But in 1890 when borrowings had ceased, the large interest payments (about \$60,000,000 a year) on the previous accumulation of foreign capital, created an unfavorable balance of payments, and resulted in an excess of exports over imports. Precisely analogous was the overturn in our own trade balance in 1873. Today, British exports are expanding for a similar reason. Likewise, in the future the annual reparation remit-

tances from Germany may be expected to result in a large expansion of the German export trade, and to bring about an excess of German exports over imports sufficient to cover the annual remittances.¹⁷

How Trade Changes are Brought About

All these are cases in which trade changes similar to those that would occur in gold countries are effected under a régime of depreciating paper, and in spite of the difference in the direction of the accompanying price changes. How, then, are these trade changes brought about? The Argentine investigation points to the following explanation. It finds the stimulus to exports, and the discouragement of imports, in the different effects of a rising gold premium (or a depreciating exchange) on different sets of prices, all of which form a part of the general price level. Stated more definitely, exports are stimulated because of the different effects of depreciating paper money on the selling prices of exports and their cost of production.

International Prices.—Except in rare instances, where a nation produces so great a part of the world supply of a product as to dominate the world market (as in the case of our own cotton, or of Brazilian coffee), one nation cannot ordinarily determine international

¹⁷ That is, such part of them as may not be covered by other German "invisible" credit items. See John H. Williams, *The German Reparation Payments—Discussion—American Economic Review*, Supplement, March, 1920.

The most illuminating discussion of the effects upon international trade of the German reparation payments which I have seen is that of Professor F. W. Taussig. See his articles in the *American Economic Review* Supplement, March, 1920, and *The Atlantic Monthly*, March, 1920.

prices. It can only accept the international price, and determine the amount of product it will export at that given price. An exporter in the depreciated paper country, therefore, in buying goods for foreign consumption, would base his price on the international *gold* price of the commodity, the cost of freight to the foreign country, and the premium on gold. In other words, given the foreign gold price, minus cost of transportation to the foreign market, he would convert his price into the domestic paper currency at the current rate of exchange. Given free competition, his export price thus becomes a paper money reflection of the international gold price. Abstracting from fluctuations in the foreign gold price, it is thus apparent that the rise of export prices would keep pace exactly with the rise in the premium on gold, and, in fact, be identical with it. My study of Argentine export prices for the fifteen years, 1884-99, shows this correspondence with the fluctuations of the gold premium to a striking degree. On the other hand, it shows that wages, rents, and other costs of production do not rise so rapidly as export prices. It is *this* gap between export prices and exporters' costs of production, and not, as has been stated, a gap between the rate of exchange (that is, the gold premium) and the general price level, or between the rate of exchange and the price of international goods, which gives an extra profit, or "bounty," to the exporter, and thus causes exports to expand.

The Present World Situation

There remains to be considered the applicability of these conclusions to the

present and future international situation. These conclusions are concerned with a set of monetary and trade conditions which constitute but one aspect of an abnormal world situation in which there is a complexity of currents and counter-currents. Moreover, they deal merely with one set of forces which are operating upon trade, money and prices. How far the particular set of forces we have examined will be permitted to work out their effects upon international trade, it is impossible to predict. That they will play some part, and that, on the other hand, they will be in some measure overlaid and obstructed by more powerful forces working at cross purposes, seem alike obvious.

The change that has occurred in the international position of the United States, for example, the violently rapid shift from the debtor to the creditor position, would point, in the strict theory of the case, to further inflow of gold and rising prices. But the nations which have remittances to make are unable to remit gold, and, on the contrary, gold is being drawn from the United States by those neutral countries in which, during the war, the dollar was at a discount, the net resultant being a considerable net outflow of gold.

European Specie Payment Resumption

A factor to be reckoned with in endeavoring to ascertain the probable course of international trade in the next few years is, of course, the possibility of resumption of specie payment in the European countries. Resumption is, I believe, certain; and in the case of certain countries, particularly Great Britain, it may come sooner than is apparent upon the surface of events.

Were the gold standard resumed, the theoretical expectation would be a flow of gold from the countries owing heavy obligations to the United States, falling prices there, rising prices here, increasing exports there, decreasing exports here, with contrary shiftings in imports. But general resumption of specie payments on the basis of the present gold holdings of Europe appears improbable; and the further inflow of gold to the United States would imply still further depletion of European gold stocks.

International Position of the United States

We have, besides, the over-extended condition of internal credit in all countries, a range of price levels admittedly abnormal and temporary. Some deflation, at home and abroad, is the general expectation. A reasonably safe statement would be that, granting the certainty of the deflation process throughout the world, our new international position is such as to require a price level sufficiently above that of European countries, once they are on the gold standard, to induce a flow of their exports, wherewith to make remittances due to us, and a decline of our exports to them. This seems a necessary ultimate condition, if our trade balance is to show that excess of imports which is the logical eventual outcome of the war-time changes in our balance of international payments.

In the immediate present at least, however, we are faced with a general condition of depreciated paper currency in the European countries; and,

in certain cases, that condition is likely to be of considerable duration—in Russia and in Germany, for example. We may, therefore, ask ourselves how the particular set of factors we have examined are likely to manifest themselves in these instances. Evidence that depreciating paper stimulates exports from the country whose currency is falling in value and discourages imports, was, of course, afforded by the increase of British exports and the decline of our own exports which accompanied the pronounced fall of sterling this past winter. How far, in the case of other countries, the working out of the full effect was impeded by the continued operation of that fundamental condition which has dominated world trade since 1914—the imperative necessities of war and reconstruction, as shown in the persistent demand for our products and the temporary inability of the war-exhausted countries to react to special stimuli to exports, however powerful—it is impossible to estimate.

Reparation Payments of Germany

In the future, the most interesting case in prospect is that of Germany and the reparation payments; and since the full amount of the annual payments, \$750,000,000, is not to be assumed until 1926, we may expect that the general state of world trade will have settled down sufficiently to afford to the economist an opportunity for additional verification of the principles of international trade and foreign exchange under conditions of inconvertible paper money.

Present Day Industrial Conditions in Germany

By R. W. BALDERSTON

Secretary Inter-State Milk Producers' Association, Philadelphia, Pa.

At present in Germany with the American Friends Service Committee

The author of this article had been in Germany about four months when he wrote this article for *The Annals*. Mr. Balderston is a careful observer of industrial affairs and has had exceptional opportunities to make first hand investigations of conditions in Germany as they now are. Being one of the mission of the American Friends Service Committee to aid in the distribution of food he has come into contact with all classes of the German population.—THE EDITOR.

IT is impossible for a casual visitor in Germany today to get other than an incorrect picture of conditions here. Around the hotel lobbies there is not much that is different from the old Germany. Business travelers can learn some things. Forward looking executives have told some of us still more as we have met them in connection with our work. They have been most frank and open in discussing any matters even remotely connected with the question of relief. These conferences naturally lead to the discussion of the present and future economic problems. At the same time, we live so close to the mountain that it is very difficult to get a proper perspective, and the mists with which the top is always encircled give a different impression every time that we look at it. Therefore, I prefer rather to endeavor to give a correct picture of conditions in certain factories which are typical of the general industrial situation.

I recently visited two German factories producing the same class of products: equipment needed by a rather large general industry. The first is, or was, the assembling plant of a well-known American company. The second is a German corporation, but with close affiliation with similar corporations in at least two other

European countries, and with one of the important corporations in the United States. It is the largest factory of the kind in the whole of Europe.

Let us first visit No. 1. The Direktor sits, as of yore, in the office marked "Privat." The room is heated by a tiny temporary stove, for the steam from the factory is too uncertain these days. The designing and sales departments are closed. In the outer office we can see a faithful stenographer, and a young bookkeeper whom we learn has just returned to his old position after spending four long years in a Siberian prison camp. We are told that the vacant chair at his side belonged to a boy who lies buried somewhere on the eastern front. We sit down and talk to the Direktor who does not mind interruptions, for just now, unfortunately, he is not very busy. Before the war, the factory received from the parent factory in the United States the important special working parts of the machines that they manufactured. The heavy cast frame was bought from a German foundry under contract, and the price was always very cheap, so the castings were much heavier than the American model and, therefore, more attractive to the European buyer. Throughout the war, the factory was engaged in war work, for it was com-

mandeered at the very beginning like all others, and the property itself was taken when the United States entered the struggle. Its war production consisted of projectile cases of some of the very small sizes and also, since the armistice, some small replacement supplies for the local railroad. The German government has just released the plant before we visit it so we can see just how it is prepared to take up its peace-time pursuits.

UTILIZATION OF PRE-WAR MATERIAL

Entering the factory building, we meet the Superintendent and his assistant who are busily engaged in supervising the sorting of the old pre-war material on hand, which has been stored away in the corners of the stock room and which they now propose to start through the factory. In fact, the first lot of thirty machines is going through the week that we come to see them, and a few samples of various models that had been cast aside in 1914, when they were almost completed, are being painted and tried out, ready for the packing room. We visit the power plant. It looks much like thousands of those in the States. But what is that fuel that the fireman has in his shovel? We go out to the bins and find such an assortment that we make a note of it, though we have already become somewhat hardened to a fuelless land. There is a supply of wood of odd lengths and sizes; there is peat or "torf," only slightly dried; there are at least two styles of lignite briquettes and, further on, three different kinds of coal. This may be an extreme case but the locomotive tenders very generally carry two kinds of fuel at a time.

Operating the machines in the factory are about forty men, or one half the pre-war force. All are old employes that have been reinstated by direct order of the government, as they have returned to claim their jobs. Just one woman remains at a bench as a reminder of the economic substitution of the war. The machines all have been much repaired. All bearings are worn abnormally because of the lack of proper lubricants. The solution pouring over the tools on the lathes is not much better than so much water. Soap is still very difficult to obtain here and no one can afford to use oil for such a purpose. As a consequence, the operation of the machines is necessarily slow and uncertain, and the standards of accuracy cannot be kept up to that which made German workmanship what it was before the war. As an American engineer present puts it: "In the States the whole outfit would go to the junkpile."

ATTITUDE OF GERMAN WORKERS

The attitude of the workers is typical. Most of them are on "piece work," but even these do not appear to be in any hurry either. All are mechanically dragging through the day without interest in their tasks. Their brains seem to be responding chiefly to the reflexes built up through habits of industry formed years ago, and the work today does not make any appeal. They work eight hours a day and five days a week and are paid an average of 2.75 marks per hour. Soon they will be paid three marks per hour.

Returning to the office, the Direktor tells us about his plans for the future. The American office has recently sent

a representative to the plant, just to see "if it were still there" and, if so, to report on the conditions as he found them. No instructions have yet come through. Such are the uncertainties of modern business communications. The Direktor, therefore, proposes to work off his stock of unfinished goods while awaiting developments. No definite orders have yet been received and it is rather difficult to name a selling price, for the value of the mark is so variable and the estimated cost of the materials so uncertain that almost any guess would be as good as another. The Direktor therefore proposes to sell on the basis of the cost of labor and material *when bought*, plus the usual profit, regardless of the cost of replacing these materials in the next purchase. This seems to be the usual practice and perhaps the best one under the circumstances, though it leads to some complicated situations. When ready for new material he does not know whether or not the factory can continue to compete with those factories that are not dependent on stable international trade relations for their raw materials or their sales. This waiting attitude is also typical.

OLD STANDARDS IN GERMAN FACTORIES

Now let us visit the larger factory where the international complications are not so serious, because the ownership is German, the materials are now very largely of German origin; they manufacture a larger variety and the domestic markets for some of the lines have been already opening up in this country in an encouraging way. Here we make a few new observations. The power is supplied by a battery of Diesel internal combustion engines,

and also some electricity is purchased from a larger power plant. The supply of fuel oil for the future is worrying the management greatly. There is no reserve of raw materials of any kind and no guarantees of further deliveries. It is interesting to see the substitute materials going through the factory side by side with those of standard quality of pre-war purchase, the substitute metals and woods being of domestic, "inland" origin and replacing that which cannot now be obtained from abroad or which are too costly for present use. Consumers are patiently enduring this situation, awaiting the time when they can again purchase goods of a more satisfactory quality. Labor saving devices are lacking in all departments of the factory, and the designs of machines being built are the massive ones that were familiar to every American salesman who attempted to sell, in competition, the lighter made ones from the States. But our young and obliging guide admits that German manufacturers cannot compete in the future in the open market unless new efficiency standards are adopted in the shop to reduce the amount of now relatively higher-priced labor. Moreover, the new prices of materials will force new designs into popularity. It is well known that heretofore German machinery has been permanently constructed because of the desire to keep down replacement costs, and this factor was a very important one in keeping up the efficiency here as the war continued.

LIVING CONDITIONS OF GERMAN WORKMEN

But let us go home with some of the workmen at night and see how they

live with an average income of 125 marks per week, instead of 20 marks, the amount received before the war. The food for the week, which can be obtained through a food ticket, has just been brought home and, for this week, is for each member of the family as follows:

<i>Hamburg</i>	<i>Per Week</i>	<i>Feb. 7-13, 1920</i>
Potatoes.....	500 grams	400 cal.
Pea beans.....	200	534
Rye flour, etc.....	100	305
Syrup.....	150	375
Teigwaren.....	300	620
Butter.....	50	380
Margarine.....	100	760
Meat.....	200	240
Sausage.....	20	30
Bread.....	1900	3940
<hr/>		
Total.....	3520	7584
Daily average...	503	1083

In addition, the father, because he is a moulder in the foundry, has 500 extra grams of horsemeat, giving 600 calories per week or 86 calories per day. The average weekly number of calories in the ration fed the Belgians through the Belgian Relief Commission was about 2800 calories, and the proper diet recommended by the Royal Society for Great Britain is 3400 calories. This food has cost about 16 marks per person in February, 1920, or 80 marks for a family of five. The balance of the week's wages, 45 marks or 36 per cent, must cover the other food needs of the family and also clothing, fuel and shelter.

Houses, such as this family occupies, rent for 125 marks a month or 31 marks a week and so if the home is not owned, but 14 marks are remaining each week to buy extras. As a consequence, many houses are being sold to pay living expenses from the proceeds and

there is an enormous sale of old furniture.

Suppose we go shopping with the wife next day and see what this wage will buy. Fish will cost 6 marks a pound, so the 45 marks would pay for enough for two meals for the family. Some apples for sauce cost from 1.5 to 2.5 marks per pound. A coat for herself of the cheapest wool will cost 750 marks, so she buys one made of some "Ersatz," or substitute material, for 350 marks. Shoes of the very poorest leather, for the children, cost from 80 to 125 marks. Good shoes for the husband are priced from 200 to 300 marks, consequently, the men whose army boots are still serviceable are wearing them for all occasions. The shop windows are full of things but very often there is not a second article of the same kind inside and even yet the department store windows are full of strings of postcards for decoration. It is of course true that there is a certain amount of goods imported that can be had by the rich and there are some lines that seem quite well filled, but the business done is only a tithe of what it was normally. There is some "Schleichhandel," or illegal food, everywhere and the hotels serve meat and butter and a little breakfast roll that is made of a whiter flour. This business is more common than during the war and is practiced more in some towns than others. But suppose our companion wishes to get some of this food. The butter costs 32 marks a pound and the meat much more. She cannot consider making such a purchase. I recently was invited to take lunch with a group of eight at one of the prominent restaurants of Hamburg and the waiter, though he had

been saving them, had only seven "Hamburg" steaks in the shop and the eighth guest took fish! Regardless of wealth, there cannot be any extra milk for the distribution is always watched very fully and it is all for the children and the very sick, on the certificate of the physician. The supply of the large cities is about one-sixth of the normal consumption. In some seasons there is no fresh milk for any above three years of age, not even the sick. Rent for such four room houses as we visit is 125 marks per month or 31 marks per week, which takes nearly all the balance of the week's wages when the home is not owned by the worker.

THE UNEMPLOYED IN GERMANY

Let us visit the home of a neighbor who has no work. He receives a non-employment allowance from the city, 36 marks for himself, 15 marks for the wife, and 9 marks for each of the three children, 78 marks in all or just the price of the food on the ration cards. As a consequence, there is no fuel except that which the children bring home from the ash dumps and along the railroads and in the corners of the coal barges. The number of unemployed in Bremen, a city of 250,000, in the last week in February was 5,000 men, at least one in ten. Next, let us go into the house around the corner, and visit a widow with two children; she makes 65 marks as a cleaner at the office building downtown. Here, the children have no clothes but those on their backs and no bedclothes. The mother has cooked two suppers this week but this is Saturday, so the store of wood in the corner will be called on tomorrow to make a Sunday dinner.

The other days the food and the room are cold alike, and must be warmed by the heat of the human body.

EFFECT OF LIVING CONDITIONS ON INDUSTRIAL SITUATION

These living conditions have a direct bearing on the industrial situation. The physical condition of the workers is such that they are not able for full work. Men are fainting daily at their tasks. This is perhaps most apparent among the brain workers who do not have any extra food allowance and who are not so able to assimilate the bread which is milled now to 95 per cent of the total grain instead of 71 per cent as formerly. The present flour is chiefly rye and barley with a little wheat and potato. These clerks are not paid as well as the laborers for they have not been organized to demand it. Doctors and judges are often not paid any more than before the war and are in very straightened circumstances.

EXHAUSTION IN GERMANY

Livestock Food Supply

In addition to the physical condition of the workers, the present exhaustion in Germany is very striking. The productive power of the soil has depreciated at least 40 per cent, to quote from an authentic report of one year ago. This loss cannot be fully regained for at least a decade, even under the most favorable circumstances. The sandy loams of the great northern plain do not hold the humus and plant food like the naturally fertile lands of our own middle west and are now reduced to the point that the German agricultural improvement campaign found them twenty years ago. Ger-

man livestock food efficiency, to refer to the same authority, is 55 per cent of normal. This will recover more rapidly, for the beef and milk shortage is largely a question of food for the animals, which was always very largely imported and consists of grain and oil by-products. The number of milk cows has been reduced only from 11 million to 9 million and the total of all cattle from 20 million to 17 million. Hogs were very promptly reduced at the beginning of the war and are now in number 10 million against 25 million before. The recovery of this food supply will take at least two years of breeding and importation before it assumes anything like its past importance. One hesitates to hazard any guess about the grain crop for 1920. The planting conditions were very unfavorable last fall and there have been great floods this winter covering great areas with water for weeks, but on the other hand the spring has opened early and it is still a long time till the harvest.

Railroad Transport

The railroad transport efficiency is reduced by worn-out rolling stock and roadbed, lack of fuel and labor difficulties. Some improvement is, however, apparent in passenger and freight traffic both, evidently due to a more efficient peace-time organization.

Raw Materials

Stocks of raw materials on hand when the armistice was signed were almost nil in spite of the marvelous substituting ability and conserving genius of the people. The thoroughness with which the nation threw every resource into the conflict makes recov-

ery and reconstruction so much the more difficult now. The production of raw materials to fill the future needs of industry depends on factors, at least two of which are at present largely unknown—(1) national alignments and (2) labor. The first mentioned will determine which agricultural and mining areas are to be German and what part of the production of those remaining in Germany is to be applicable to the needs of German industry. The second factor, labor, is even more uncertain. The laborer here has never shared at all in deciding industrial policies and nobody can foretell what he may do with his present large measure of self determination, or how labor and capital will "pull in double harness." Labor is also largely influenced by the political situation and is much depressed by the fact, for instance, that the coal he is mining is perforce largely for foreign consumption.

FOOD SITUATION IN GERMANY

The food situation promises to be much more serious as the present supply is exhausted and this will certainly have a serious effect on the industrial situation. Recovery in food production for the next year will be still very poor as long as there is not more attention paid to the factor of price as a stimulus to production. The policies of the German food control authorities have been so diametrically different from those of the United States Food Administration that it is easy now to compare them along several lines. In one particular, at least, the American plan was far superior. Production kept pace with consumption at least to the point that it could

become normal in one season. All this is aside from any discussion of the conditions which both had to face.

THE PRESENT MIXED POLITICAL SITUATION IN GERMANY

An example of the present mixed political situation is the beet sugar industry. The beets are grown in Tzchecho Slowekei, the factories are in Austria, and the coal somewhere else; the beets rotted because the governments concerned would not allow the international transportation necessary to get the three elements together. The textile industry cannot get started because of the exchange rate and because there has not been any satisfactory basis of credit devised so the manufacturers can pay for their imported raw materials. It would be tiresome to go into more detail and take up the whole list of German industries, as they seem to come somewhere within the range of those that have been mentioned.

EFFECT OF PEACE ON GERMAN INDUSTRY

The questions arising out of peace have a very direct bearing on this matter of the recovery of German industry, and it is difficult to discuss the future without referring to some of the more important of them. But there is not room in such a paper and they are now being widely discussed in the contemporary press and literature. I may say that some of the financial terms of the treaty do not seem possible of fulfillment, and it is to the interests of the Allies, as well as the peace of the world in general, that they be somewhat modified. This is said from the viewpoint of business stability and it

is now becoming recognized in England that a bankrupt Germany cannot pay indemnities.

To talk to the business men here is to have a series of questions put at you about as follows: How can we import raw materials when our credit and our currency is worthless? How can we work without materials, either foreign or domestic? How can our laborers live without work? We are short of food; how can we buy food without money? It is well expressed as a vicious circle, a squirrel cage in which the German people are treading the wheel to the point of exhaustion and yet can see no way out. Yet there are many things to point to a better time if the matter is handled carefully. The people have learned self-sacrifice and can do with far less of the better things of life than they had before the war. There is a movement to pool all the industries of the nation in one association to get foreign credit. If food enough can be had for the next few months it will strengthen the forces making for order and business integrity, for the German is by nature and training conservative and orderly, and when he has work to occupy his attention and is fairly comfortable in body he is very slow to take up extreme ideas.

But the last few weeks show some improvement. The coal miners are working longer hours and this seems to be reflected all over the country a little. The great Krupp works at Essen were among the first to get started at peacetime production, being fortunately situated with a coal mine within the factory fence and iron ore nearby. Now a great variety of products are made, everything from padlocks and

typewriters to railroad locomotives. Some of the departments are so busy that three shifts of laborers and mechanics are employed.

The future peace of the world is wrapped up in the question of the rapid resumption of industry and trade in all the countries of Europe and the

United States, and we cannot afford to miss every opportunity that is offered to see to it that this settlement is accompanied by such international and internal agreements as will make permanent the ideals that the people of the United States thought they were fighting for and dying for.

The World Breakdown

By SIR GEORGE PAISH

London, England

THE world has begun at length to feel the full economic consequences of the war, and of the dislocation of production which that great conflict entailed. How far reaching those consequences will become has yet to be discovered. In some measure the extent of the consequences will be governed by the wisdom with which an effort is made to control the danger. If the situation is handled wisely and in a statesmanlike manner, then readjustment will be effected without any great measure of suffering, but if the situation is handled by persons lacking knowledge of fundamental economic conditions, then a very great disaster is at hand. There will, on the one hand, be tens of millions of people lacking the necessities of life, while, on the other hand, there will be vast supplies in the warehouse, or on the farm, which will not be sent to the people who need them.

THE CONDITION OF WORLD PRODUCTION

It is essential to realize that the war has brought about a very great curtailment in the productive power of certain countries, and, that while it has stimulated and increased the productive power of other countries, the aggregate amount of world production is far beneath the level needed to meet the world's ordinary requirements. Given the very best and most efficient methods of distribution there would still be shortage, but with production a long

way below normal and with inadequate means of distribution, starvation, on a great scale, becomes inevitable.

With defective statesmanship the world will suffer from three evils: (1) lack of supplies where they are most urgently needed; (2) lack of employment, and (3) lack of buying power. In other words, there will be not only a famine in food and raw material, but a famine in money as well. With effective statesmanship, however,—and I am here speaking of the statesmanship of all countries—famine in food, raw materials and money should be effectively averted.

Food Supply of Western Europe Prior to War

From Russia.—To understand and appreciate the world need of food, it is essential to recall that, prior to the war, a very large part of the food needed by Western Europe was supplied by Russia and that the European nations experienced no difficulty in paying for these supplies because Russia had to make large payments to them in respect to interest on capital, and because Russia needed to buy from Western Europe great quantities of manufactured articles of all kinds and descriptions. Before the war, Russia supplied to Western Europe, on the average, some four hundred million bushels of cereals, mostly wheat. When war began, and the Dardanelles was closed, this great supply of Russian food was shut off from Western

Europe and has not since been available. Moreover, the power of Russia to produce food has been, temporarily at any rate, most seriously curtailed. In the early years of the war, when Russia was unable to send abroad her surplus, the production of Russia was greatly curtailed, while her consumption was increased. This movement went so far that in the spring of 1917 Russia had not enough food for herself and the economic privation which resulted brought about the Russian revolution. From that time to this, Russia has been in a state of great disturbance. The productive power of the country has remained at a very low ebb. Russia is not only unable to produce a surplus of food for export, but she is also unable to supply her own people with sufficient food. Probably no step would be more effective in inducing the Russian people to adopt a more constitutional and democratic form of government than that of supplying them with the necessities of life. In other words, instead of Russia being able to supply modern Europe with food, as she was doing prior to the war, temporarily at any rate, it needs to import food in order to support a very large number of people in the north of Russia.

*Increased Demand for Import of Foods
into Europe*

The next factor to be noted is that the European nations, as a whole, need to import very much more food and material than they did prior to the war. Over practically the whole of the war area, that is, Germany, Austria-Hungary, Roumania, Servia, Italy and France, there has been in the aggregate very great curtailment of pro-

duction. As far as the data is available, the curtailment of output is not very far short of 40 per cent. The curtailment is greater in some countries than in others, but the average curtailment is this high figure. Hence, just at the moment that Russia cannot supply Europe with food, Europe needs to buy much more food than ever. There is then a double deficiency—a greatly diminished supply with a greatly increased demand.

Great Britain.—The productive power of Great Britain has, on the whole, been maintained, though not increased. Great Britain needs to buy from outside countries just as much today as she did prior to the war, when about two-thirds of all her food supplies had to come overseas. Including Russia and Great Britain, Europe's production of food has been curtailed between 30 and 40 per cent since the war. Prior to the war, Europe, as a whole, needed to buy from outside countries a substantial part of the food she used. Today, Europe needs to buy from outside countries nearly 50 per cent of the food she needs for consumption. To the extent that Europe cannot obtain those supplies, her people must go short. Some economy in consumption in comparison with pre-war levels is possible, but economy to the extent of 50 per cent is impossible without involving the people who dwell in the great towns of Europe in almost complete starvation.

In considering the world's food situation it is essential to recollect that just as the nations which produced a surplus of food for export meet their own needs before they send away their surplus, so the country districts of Europe usually meet their own needs before

they sell their surplus to the towns of Europe; and that, consequently, the burden of deficient supply falls mainly, if not entirely, upon the town populations. Moreover, in considering the present situation, another factor has to be taken into account. With the conclusion of peace last summer the people of Europe gave a sigh of relief, under the impression that their war privations were at an end and that there would be a very much greater supply of food in the future than in the past. Consequently, the consumption of food since last summer has substantially expanded and there has not been anything like the economy there would have been had the war continued, as the people had realized the difficulties that would arise in purchasing available supplies. In some measure, additional rations were granted in order to prevent political agitation and to keep the people quieter than they would have been if a stringent ration had been maintained. The effect of this greater confidence has been to bring about a substantial expansion in food consumption and to reduce the farmers' stocks in Europe to a relatively small total. Hence, for the balance of the current season, still greater imports even than last year are essential.

Fortunately, during the war with the great curtailment in production in Europe and increased need, the crops of the food-producing countries, which include the United States, Canada, Argentina, Australia and India, showed substantial expansion in the aggregate, an expansion which helped to keep shortage in the Entente nations within limits. Now, however, a short supply of food over the whole of Europe, including the Central Powers and Russia,

has to be met. The surplus supplies from these outside countries are not nearly sufficient for the purpose, and it is evident that, even if in one way or another, the means can be obtained to enable Europe to purchase the surplus food supplies of these countries, great economy in consumption will have to be exercised in order to make the supply last out until the new harvests are gathered next fall. Indeed, it is to be feared that, in spite of every possible measure that may be taken to supply the peoples of Europe with the food they require, there will still be most serious deficiency, which will amount almost to famine in certain countries and in certain districts. Even with the most efficient distribution of supplies, a condition of great privation would seem to be unavoidable in northern Russia, in Germany, in Austria, and in Poland, while Italy, France and even Great Britain will suffer from serious shortage.

DIFFICULTIES OF FOREIGN IMPORT TRADE FOR EUROPE

There has now arisen, however, a situation which warrants much anxiety as to whether or not even the food available in the countries that have produced a surplus of food will be placed at the service of the European nations, which so urgently need all the food which the world can supply to them. In consequence, not only because of their greatly reduced productive power, but also because of their inability to buy food from Russia, the European nations need to buy greatly increased quantities of produce from countries from which they do not normally buy, and which do not require European goods in payment, even if

Europe were in a position to export such goods.

From Canada.—Ever since Canada has been a great exporter of food to Europe it has been the custom of the Canadian people to buy from the United States, and not from Europe, the manufactured goods they require in payment for their food. Hence, Canada's imports of manufactured goods from Europe in proportion to her exports of produce has always been small. At the present moment Canada is not only exporting great quantities of food to Europe at high prices, but is also buying back in exchange very little of Europe's manufactures. Hence, the depreciation of Europe's currency in Canadian dollars is very great. On the other hand, Canada is buying, as usual, great quantities of American products, but inasmuch as she cannot collect her debts from Europe, except in securities which she has difficulty in selling to the United States, Canada is experiencing very great difficulty in paying the United States for her products. It is probable that Europe will not experience any great difficulty in buying Canada's products, as Great Britain possesses large quantities of Canadian securities, including farm mortgages which the Canadian people are willing to buy back. Unfortunately, the amount of food that Canada can supply to Great Britain in particular, and Europe in general, is but a very small part of the total amount required.

From Argentina.—When one considers the position of Argentina, the situation is much the same. Argentina is willing to sell her surplus supplies of food on credit and to take in payment either European credits or to buy

back some of her own securities which Europe possesses. Nevertheless, the amount of food and raw material that Argentina can supply to Europe for the balance of the current season is but a very small part of the great amount needed.

From Australia.—Unfortunately, there has been drought in Australia this season and the amount of food that Australia now has for sale is limited. A very large stock of wheat was built up in Australia during the war, but a good deal of this had to be sent to India last year as there was drought there, and now with Australia suffering from her recent drought, the supply of Australian wheat is greatly diminished. It is hoped that the new Indian wheat crop will be a good one, but owing to the difficulty of providing exchange, it is by no means certain that Europe will be able to purchase anything like normal supplies from India.

From the United States.—But when allowance is made for all the food and all the raw material which the countries referred to can supply, it is clear that Europe will need all the food and all the raw material, as well as all the manufactured goods which the United States can supply to her, and that, without the American supplies, the shortage of food and of raw materials in Europe will be exceedingly severe. In any case, the shortage will be serious, but without American supplies the shortage will be disastrous.

THE INTERNATIONAL MONEY SITUATION

During the War

But here another factor comes in. There is a famine in international

money. Europe, in spite of the vast volume of her national currencies, possesses very little international currency to purchase the produce and goods of the United States, unless that produce and those goods are supplied by the American people by credit operations of one kind or another.

When the War Began.—Doubtless, it will be asked: How was it possible for Europe to purchase so much American produce and so many American goods during the war, and how is it that only now is there difficulty? The answer to this question is two-fold. When the Entente nations entered the war there was a large sum of money due them by the American people, both on current account and investment account, and this money and these investments were used to pay for produce purchased from the United States until America came into the war. There were signs, however, in the spring of 1917, that the Entente nations were beginning to experience difficulty in obtaining the credits they required in order to purchase the food and material with which the American people were supplying them.

After America Entered the War.—When the American people entered the war, the American government assumed the task of supplying the Entente nations with all the money they required to pay for the produce and goods they were purchasing from the United States. In rather more than two years the American government supplied nearly ten billion dollars for this purpose. This action on the part of the American government caused the difficulties of the Entente nations in paying for the things they required in the United States and elsewhere,

entirely to disappear as long as the war lasted. In the spring of last year, however, the American government notified the Entente governments that it was not prepared to go on indefinitely lending money to the Entente nations to enable them to purchase the things they required in the United States, and that they must finance their purchases by ordinary credit operations.

Credit Difficulties After the War

Now that the war is over, the Entente nations experience very great difficulty in arranging credits for the purchase of food, raw material and manufactured goods in the United States. Nevertheless, they have succeeded in one way or another in paying for the produce and foods they required in 1919. In that year, America sold produce and goods to the value of nearly five and a quarter billions of dollars to Europe and accepted payment for them to the extent of only three-quarters of a billion dollars in goods, leaving four and one-half billions of dollars to be financed by credit operations of one kind or another. Of this total rather more than one-half was satisfied by the grant of credit to the Entente nations by the American government, and the other half was settled for, either by sales of European securities to American investors and bankers or by the creation of short credit. From the data available, it would appear that a large part of it was arranged by short credit, which merely means that Europe has still to face the task of payment. Recently, Mr. Glass stated that the American government had granted additional credit for about three-quarters of a billion dollars for

the purchase of war stores sold to France. This means that, altogether, America, in the past year, sold about six billion dollars worth of produce and of goods to Europe and that Europe was able to pay only to the extent of three-quarters of a billion dollars in goods. The whole of the balance of five and one-quarter billion dollars had to be settled in credits, long or short, and in securities.

The American government has now notified the European nations that it is not prepared to finance the exports of American goods by means of American government loans. This means that in so far as Europe cannot finance its purchase of American goods by ordinary credit operations, it will be unable to buy them. Let us now look at the situation which has thus arisen.

In the first place, Europe still owes a considerable sum on short credit in respect of produce and of goods bought in 1919, and, in the second place, it has to obtain fresh credit for the purpose of buying any goods it cannot pay for by exports of its own goods in 1920 and in succeeding years. Not only has the power of Europe to obtain credit from the American government come to an end, but her power to obtain credit from American bankers has practically come to an end also, not because American bankers are not willing to grant credit, but because their power to grant it has been used entirely. You will recollect that in 1914 the federal reserve banks were brought into being and were entrusted with the custody of the reserves of the national banks. This action by the government and by Congress set free for banking purposes something like four hundred millions

sterling, or two billions of dollars of gold and cash reserves for additional banking purposes, and gave the federal reserve banks the power to grant banking loans to the extent of about one and one-half times the amount of gold and cash placed at their disposal. In other words, the Federal Reserve Act by the stroke of the pen, as it were, gave the banks of the United States the power to grant additional credit to the extent of about six hundred millions sterling, or three billions of dollars. The bankers have now created almost the whole of the credit which the new law authorized. A good deal of that credit has been absorbed in financing the sale of American government bonds, and the balance has been used to finance the trade and commerce of the United States. Therefore, at the present moment, not only has Europe no power to obtain any credit from the American government, but it also has practically no power to obtain additional credits from American bankers. In other words, the methods by which Europe was able to buy the food and material it required from the United States during the war, and until the present time, have now almost ceased to operate, and unless some new method is discovered it is obvious that Europe will be unable to purchase any American food, raw material or manufactured goods other than what it can pay for by exports of its own products, that is to say, only to a relatively small total. The recent fall in the exchanges clearly reveals the great difficulty which Europe is experiencing in making payment for the produce and goods which the European nations so urgently require to buy from the United States.

Foreign Exchange Rates

This week the value of the British pound, which normally is equal to \$4.86 in American money, fell to \$3.18, a depreciation of over 34 per cent. The franc fell to a still greater extent. Normally, only 5.18 francs have to be given for an American dollar, but at the current rate nearly 15 francs have to be given for an American dollar, a depreciation of over 65 per cent. Normally, only 5.18 Italian lire have to be given for an American dollar. Now, no fewer than 18.82 lire have to be given, showing a depreciation of nearly 74 per cent. Normally, the German mark is equal to 23.83 American cents. Now, it is equal to only one cent, and therefore shows a depreciation of no less than 96 per cent. The value of the Austrian crown and the Russian rouble, and the currencies of Roumania, Servia, and the other Balkan states shows enormous depreciation, amounting indeed to not very far short of 100 per cent. In other words, their currencies in American dollars have very little value. All this implies that unless some step is taken to enable the European countries to purchase American goods, that the value of their currencies in American dollars will fall practically to the vanishing point, and that they will be unable to purchase. This means a money famine of an unexampled intensity, a money famine which at the present time, when Europe so urgently needs the food and raw materials of America, entails something far more serious than a money famine. It involves shortage of food in Europe to an extent which will bring starvation to many millions of people, and lack of raw material to an extent that will throw many millions of people out of em-

ployment. Moreover, unless the situation is dealt with effectively, a complete breakdown of the exchanges of credit, of commerce, and of trade throughout the world will become inevitable.

HOW TO MEET THE SITUATION

What is needed to rectify the situation is that the American public, in its capacity of investor, should either be willing to purchase European securities, or should purchase some new international security in which it has complete confidence.

After giving the matter the most careful consideration, I have come to the conclusion that the most effective method of dealing with this situation is by a coöperative effort of the most comprehensive character. The situation indeed demands as much coöperation and as much effort as did the task of providing funds to carry the war to success. The situation, in fact, demands that every nation should assist in the work of overcoming the difficulty, not only because of considerations of humanity, but also because of considerations of self-interest, for every nation is interested in the matter, either as seller or buyer, either as granting credit or obtaining credit. The very worst thing of all for everyone concerned, whether as buyer or seller, is that the situation should be allowed to drift so that no nation can sell and no nation can buy. Considerations of humanity are even more cogent than considerations of self-interest. It is inconceivable to imagine that the Entente nations, including the American people, should have fought a great war in defense of humanity and afterwards should allow humanity to be destroyed by a food and a money

famine, which might be averted by coöperative and sympathetic action.

The result of the war has been to cause the peoples of the world to demand the creation of a League of Nations for the preservation of peace, in order that humanity may never again be threatened by so great a disaster as the recent war. The peoples of the world, when they understand the present situation, will, I am sure, be prepared to demand that that League of Nations shall avert disaster to the race from a food and money famine, and will be prepared to honor any obligation that the League of Nations may incur in averting so great a catastrophe.

Therefore, I suggest that the remedy for the present situation is to be found through the League of Nations and by pledging the credit of the League for the due payment of any food, raw material or manufactured goods which the nations may supply to each other at the present time, and for which they are unable to obtain payment in other goods and in other products. There is a factor in the American situation which renders such a solution particularly advisable. It is very difficult to induce any American investor to purchase securities that are not tax-free, having regard to the heavy burden of taxation in this country. Very much the same situation exists in other countries, where the burden of taxation is a heavy one. To raise all the credit that is needed to enable Europe to purchase the food, raw material and manufactured products that it requires, not only to overcome its immediate difficulties, but in order to restore its productive power and repair its war damage as well, will demand a united and sustained effort. Nevertheless, the effort will be relatively unimportant in

comparison with the financial effort that was needed to carry on the war.

I am convinced that a credit of some twenty billions of dollars spread over five or even ten years will not only enable Europe's productive power to be effectively restored, so that it will be able to pay for the things it needs to buy from day to day, but that it will also preserve the world from a great disaster.

During the war, the nations spent for the purposes of destruction some fifty billions of dollars per annum. They now need to spend in five, or even ten years, a total of no more than twenty billions of dollars for the purpose of repairing the mischief of the war and re-starting the world upon a new era of prosperity, free from the danger of war. When one remembers that during the war these vast expenditures were made for the purpose of destroying wealth and destroying life, while the proposed new expenditures are for the purpose of creating wealth and preserving life, it is obvious that the amount is not only a small one, but well within the power of the nations to supply. An issue of League of Nations bonds, free from taxation in all countries and enjoying good markets in every country of the world, would enable the present situation to be effectively dealt with, and the peril to which Europe, indeed the whole world, is now exposed to be safely overcome. The League of Nations has been created to preserve mankind from the disaster of war. It will give an earnest of its power to preserve mankind from worldwide catastrophe by overcoming the grave danger to which civilization is now exposed from famine, and through famine, from anarchy.

The Dangers of International Governmental Loans

By OSCAR T. CROSBY

Formerly Assistant Secretary of the United States Treasury

LET us assume *some* settlement reached in the matter of war-claims against Germany and her late Allies. We shall then have governments related to each other as creditors and debtors, in specific amounts, and on a scale never before known.

DEBTOR AND CREDITOR GOVERNMENTS

United States.—The United States will appear as a lender only—not as a borrower—holding approximately ten billions of dollars of the obligations of our associates in the war. The largest claim runs against Great Britain; France is next in order, then Italy. Russia, and certain smaller powers owe us considerable sums.

Great Britain.—Great Britain will appear as debtor to the United States in a large sum (about four and a half billions), and, in much smaller sums, to various neutral Powers. Her credit account with Allies will be substantially twice as great as the debit, Russia, France and Italy being the chief debtors. She will also own a large portion of the enemy indemnity bonds.

France.—France will appear as debtor to Great Britain and ourselves in nearly equal amounts (about \$2,000,000,000 each)—and enough more to neutrals to bring her total to \$6,000,000,000, in round figures. She will be a creditor to Allies in sum approximately one-third her debits, unless the claims of French citizens for pre-

war loans to Russia be included. The government has, in fact, practically adopted these claims, which will stand on as high a plane as any other debts of a reconstructed Russia. France will also have received the largest single portion of enemy obligations.

Italy.—Italy will owe approximately four and a quarter billions—more than one-half to Great Britain, and nearly all of the remainder to us. She will have received considerable portions of enemy obligations.

Belgium.—Belgium will appear as a debtor for about \$1,400,000,000, in equally rough amounts to Great Britain, France and the United States. She will have received a large portion of the German indemnity bonds.

Greece, Jugo-Slavia and Roumania.—Greece, Jugo-Slavia and Roumania will appear as debtors to their bigger brothers in the fight, and will have received comfortable slices of the indemnity loaf.

Poland and Tchoko-Slovakia.—Poland and Tchoko-Slovakia will owe relatively small sums, unless the extravagant wars, still maintained by Poland, should result in large debits not yet made known.

Russia.—Russia will owe about three billion dollars to Great Britain, about one billion to France (excluding pre-war debt above mentioned) and approximately two hundred million to us. Her financial relations with the new border states, as they will be fixed at the end of the existing,

contests (March 30, 1920), cannot be forecast, but the sums involved are not likely to be large in comparison with the great figures we are considering. Russia will probably not hold any recognized claims against the former Central Empires.

Germany.—Germany will be burdened with an enormous external debt, and, although she made great advances of money to her late Allies, will probably have nothing whatever on the credit side of her international ledger.

Austria-Hungary, Turkey and Bulgaria.—Austria-Hungary, Turkey and Bulgaria will be in the same plight

Japan.—Turning to the East, Japan emerges as a creditor nation, but her balance sheet will not contain such extravagant figures as appear in the American-European situation.

China.—China will be a debtor nation, quite capable of paying all claims against her, unless she be hamstrung by outsiders, or too much bedevilled by insiders.

South American Countries.—South American countries, in so far as external relations are concerned, will be found in varying states—all the way from affluence (as in the Argentine Republic) to a strained, though embarrassed solvency (as in Brazil).

Doubtless, the first thought suggested by the outlines just given is that a clearing-house operation should at once be undertaken. Indeed, something of that sort would promptly be done if governments possessed the intelligence and elasticity in action of the average man of affairs. But even the most agile trader would hesitate somewhat more in dealing with the case before us, than with one

in which cash payments are involved, and in which all checks are equally certain to be paid on presentation. The transaction considered actually involves long-term notes whose makers are but dubiously solvent, and are sovereigns not subject to any well-defined judicial control.

Moreover, after all possible shuffling of the cards, the United States and Great Britain would emerge as net creditor nations, while Germany and her satellites would appear as net debtors. That statement alone justifies, I think, that most serious attention be given to the *principles* which it is my desire to emphasize.

DANGERS IN OWNERSHIP BY ONE NATIONAL TREASURY OF LARGE OBLIGATIONS OF OTHER NATIONAL TREASURIES

These principles are, *first*, that considerable debts held in one national treasury against other national treasuries constitute a grave menace to international peace, and, *second*, that this danger may be much diminished by transferring foreign governmental obligations out of the national treasuries and into the hands of the public throughout the world.

Establishment of a Financial Balance of Power.

It is a commonplace in history that loans to relatively weak nations have been used as a means for interfering in the domestic affairs of the debtor. The origin of the thing *may* have been innocently commercial; the first political pressure concerning it *may* have been made in the sole spirit of the collecting agency, but how often has the *dénouement* of the play been almost

naked conquest! Dealings of this sort, seen in various stages, appear in the contemporary history of China, Turkey and Egypt. The results of such intermeddling (however justifiable it may seem in a particular case) are usually some form of force used against the borrower, and many heart-burnings among the lenders and their rivals for world power. As in the case of the famous six-Power loan to China, governments that cannot themselves advance a sou, insist that their nationals be given a place as creditors. It is thus hoped to establish a financial balance of power, which, in turn, is hoped to insure against special political and economic privilege in the debtor's country.

The weakness of the borrowers, in the classic pre-war instances, tended to minimize the possible evil results of the system. Strong lending nations might, indeed, squabble over "compensations"—but some compensations they could force out of the borrower. It was scarcely necessary to contemplate armed resistance on his part, and all the dire consequences of fire lighted near to one's own dwelling.

Compared with these earlier cases, the situation created by the Great War is far more menacing.

Debtors and creditors alike are proud and powerful nations. Some have been accustomed to play the master's rôle. All are sensitive to foreign criticism. Temperament and tradition will inspire the fiercest resentment against him who would say, "You should not do this or that thing—you are about to waste the money you owe me!"

Those who have borrowed from us

have various colonial enterprises in hand. These may be called the fruit of imperialism, or of commendable commercial expansion, or of humanitarianism (of the White Man's Burden variety) according to the prejudices, the interests or the hypocrisy of various phrase-makers.

In any case, such ventures will almost certainly lead our debtors into military expenditures beyond those required by a policy of quiet self-containment.

They are also making, or about to make, various experiments in state ownership. As to these, the most ardent collectivist will scarcely prophesy anything but treasury deficits, at least in the earlier years of operation.

A protectionist revival is one of the legacies of war. Even in England attempts are being made, covertly and openly, to build the great imperial wall of which Chamberlain dreamed. That we, the wolf-tribes of the world, should experiment as we choose with protectionist doctrine applied to *our own homes*, must be granted—if only because of a necessary comity between wolves. But when we extend "protection" for our own trades around peoples whom we control by the sword, the case is different. Special privileges in foreign or colonial fields when gained by violence, must be held against violence; but that will cost money.

The British merchant marine—a magnificent monument of private enterprise in free competition—is being threatened by our alarming cry that our flag must float over our goods, cost what it may. Our subsidies will breed subsidies. The victims of infectious diseases curse each other as authors of the spreading evil. We

shall hear much of such imprecations in the future—with inquiry as to whose money is really supporting the competitors' ships.

Not only will Great Britain struggle to maintain her honestly-earned supremacy as a carrier on the Seven Seas, but she is fated to strive for military mastery of the watery fields and also of the air-ocean.

And now a new element enters into the age-long competition between fleets, whether they be peaceful or warlike. All must join in a scramble for oil. In jungle and desert and prairie, empire-builders push their adventurous way, seeking control of the precious fluid.

*Position of United States as a
Creditor Nation*

In all the directions indicated, and in others that will occur to the reader, the debtors of the United States will be spending money, while contending along almost every line with American efforts for commercial expansion. Added to the protest of our traders will be the lamentation of the very righteous among us, who feel that henceforth our power (so dangerously great!) must everywhere be employed to enforce something they will call "justice."

Even in the expression of our "holier-than-thou" views, we shall inevitably display "the unconscious arrogance of conscious wealth." Entering into this arrogance, as a part of its very constitution, will be a large ignorance of distant and complicated situations.

Thus it is that upon the platform of the creditor, whose loans are presumably jeopardized by the activi-

ties of a debtor and a rival, our ambitious politicians, our immoderate enthusiasts and our keen traders will be able to excite and exploit the popular passion of patriotism, while disturbing a hundred delicate international situations. In the stirring of this witches' cauldron of trouble, we will not appear as a peculiar people. Every creditor country, similarly circumstanced with respect to debtor countries, will produce similar phenomena, and the latter will reply to every criticism with outraged indignation. All this, because human nature is as it is.

It will be said that anticipation of such universal quarrelling is needlessly pessimistic. Yet it has already begun. Several weeks ago, Congressional discussion of the proposal that we should defer for three years collection of interest charges from the Allies was enlivened by a member who declared that Great Britain could well pay these charges if, as had been reported, she is about to spend huge sums for a conquest of the air. The same protest appeared on streamers shown in the great St. Patrick's Day parade in New York, but directed against the British naval program. Organized press campaigns are inspired by the same spirit, though the graves are still green that hide the bodies of British and American soldiers fallen together in advancing against a common foe.

So far as we are concerned, a truce to mischief-making may be accomplished by the definitive understanding in respect to interest charges just mentioned. But three years will pass very quickly. Heaven forbid that the blustering winds now blowing

should have gathered more force at the end of that respite! Another adjustment may then be required by our much-strained debtors. Who can foretell the passions that may enter into a new negotiation?

I cannot, in this paper, further emphasize the grave dangers inherent in the ownership, by one national treasury of embarrassingly large obligations of other national treasuries. Enough has been said, I hope, to show that each relation of this kind results in the exposure of national nerves of pride and interest. These nerves may be attacked on the raw by a single chauvinist, minister or legislator, and they may be thrown into acute anguish by the loud cries of priest, politician, profiteer or thoughtless populace.

Preventive Measures

Effect of Cancelled War-Debts on Debtor and Creditor Governments.—Let us now consider preventive measures against the indicated malady.

Before presenting my own views, let me advert to a proposition often heard in Europe, and acclaimed by a very few voices here. It supposes that, as between allied and associated governments, all war debts shall be cancelled. This has the merit of simplicity, and of great advantage for net debtor governments. Great Britain and the United States would be net losers. Unfortunately, however, the American mind, before consenting to this radical proposal, would certainly insist upon an inquiry into, and an assessment of value, in the various territorial, commercial and political plums which our co-belligerents have extracted from the victory pie. I do not rail against this

appropriation; I only state that it has taken place, continues now to take place, and that the plums have presumptive value, evidenced by the struggle for them. And I further say that valuation of them in specific sums, accurately determined, is impossible, and that to attempt it would result in an exchange of bitter recriminations carrying to dangerous pitch those national passions which for a time the Paris Peace Conference suppressed, but evidently did not destroy. The whole subject is full of dynamite. Even without putting "mandates" in the scales to weigh them against dollars, we shall quarrel enough about them. We cannot say, "Let a sleeping dog lie," for they will not be quiet, but let us do nothing to make the dog bite.

My own suggestion runs as follows:

Settlement of Enemy War Indemnity.—First, the enemy war indemnity, and its distribution among the Allies should be fixed at the earliest possible moment. If, ten years hence, it should appear that a few more millions of marks *might* have been laid, let us not lament over the error. I shall not consider here the proper amount to be laid. I urge only that this prime question should not be left open, as may be done under the Treaty, for a long period. Objections to that course are obvious.

Settlement with Germany.—Second, the determination should be based on an estimate of total amounts that Germany can be expected to pay in six successive periods of five years each, in an ascending scale of periodic payments.

Obligations of Varying Denominations.—Third, these amounts should

be represented by obligations of varying denominations, some at least as low as five hundred dollars, bearing relatively high rates of interest, with appropriate sinking-fund provisions; the total to be paid in interest and principal not to be affected by the interest rate, which should be high enough to attract private purchasers throughout the world.¹ There is in all of us a speculative spirit, expressed in some part of our investments, however conservative we may be in respect to the balance. It is this spirit which furnishes money to nearly all new enterprises, and to old enterprises having exceptional need for funds. It is to this respectable speculative spirit that we should now turn in order to make a wide "spread" of national debts.

Negotiable Obligations.—Fourth, all inter-ally war debts, not cancelled by clearing-house operation to be similarly expressed in negotiable obligations.

Exchange by United States of Claims against Allies for Enemy Obligations.—

Fifth, the United States to offer to exchange our claims against Allies for enemy obligations received by them, up to the total held by us, if corresponding indemnity bonds are held by our debtors.

Offer of Residuum War Obligations to Private Investors.—Sixth, any residuum of war obligations held by one national treasury, against another, after all exchanges are completed, to be offered continuously, until sold, to private investors throughout the world, the seller making no indorsement of his

debtor's paper. Some of those who have borrowed from us might not accept our offer of exchange, preferring to try to realize cash from German obligations, while deferring to as remote a date as possible final payment of their debts to us. We should then be selling Allied, instead of enemy obligations to the public. If our offer were accepted in its entirety, there would be ten billions less to float on the world's market, than if it were rejected. In either case, governmental promises to pay would be scattered "from China to Peru," and direct claims of one government against another would no longer threaten our peace.

In the long run, large portions of these obligations would doubtless drift into the country of origin, thus happily transforming (*pro tanto*) an external into an internal debt. If this process were complete, and if unfortunately the obligor should find it necessary to ask an accommodation with respect to these obligations, only a slight shock, if any, to international relations would result. The disturbance would undoubtedly be much greater if appeal for modification of terms were made to large bodies of foreign holders. Indeed, the governments of these holders might, if they chose, take up the cudgels for their citizens, and produce, in part, the political strains which we are endeavoring to avoid. But, with a wide dispersion of the holdings, we may count upon diversity of political interests among the governments of the holders, considerable delay in making an accord of action, and, in general, *avoidance of volcanic procedure by any of them.*

¹ A modification of this plan may be found in the issue of annuities, for various periods up to thirty years.

You may ask then, "What security will purchasers have as to payment of the obligations in question?" They will have the only security that is worth while in dealing with a sovereign state—that is our well-founded belief that "Honesty is the best policy." Self-interested desire to maintain national credit affords, in the case of the great governments under con-

sideration, a better guaranty for their obligations than any other that can be devised. To use the ultimatum and the dreadnaught in running a collection agency—that way madness lies.

The proposition I make will not insure the world's peace, but it will dissipate some of the clouds that blacken the sky.

The Sequence in War Prosperity and Inflation

By ALVIN H. HANSEN, Ph.D.

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PROSPERITY and depression, like most words in common use, are very elusive terms. The average university sophomore is fairly certain that he knows precisely what they mean, yet a little questioning soon reveals the fact that he is quite at a loss to give the words definite content or to state the fundamental criterion by which one may determine the one or the other. It becomes necessary, then, to brush aside some of the loose thinking and popular fallacies that prevail.

THE CYCLE OF PROSPERITY AND DEPRESSION

In the first place, industry is generally thought of as running along on a normally level course of prosperity, sooner or later, by accident as it were, to be plunged into the abyss of deep depression. Statistical investigation shows that such is not the case. On the contrary, industry continually rides a sea of undulating waves, now riding the upward waves of prosperity, now turning the crest of the crisis, now sailing the downward wave of depression, and finally trimming its sails in the trough of the wave in preparation for the next cycle. Neither prosperity nor depression are static conditions. They are dynamic phenomena, always changing into something else. Prosperity inevitably develops into crisis, crisis into depression, depression into recovery, and recovery into prosperity.

Inflation and Prosperity

Another popular fallacy relating to prosperity and depression is that everyone is benefited by prosperity, and likewise everyone is adversely affected by depression. But society is made up of a great complex of industrial groups and classes, and the changes taking place in the industrial cycle by no means affect all alike. This is especially true when such profound changes take place in the cyclical movement of industry as have taken place in the war period under discussion. In fact, this opposition of interests has been so keenly felt during the last few years that it has served to obscure in the popular mind the meaning of the term prosperity. Has the war been a period of prosperity? Certainly not to the classes with fixed incomes, to the investing class or to the salaried class. It therefore turns out to be a considerable shock to many people to be told that a period of rising prices is uniformly a period of prosperity, and a period of falling prices a period of depression. To most people, at the present time, falling prices would appear a consummation devoutly to be wished, but they certainly do not think they want depression.

What they fail to realize is that the wheels of modern industry are controlled by the compelling power of profit making. Industry goes or stands still in accordance with the profit making advantage of the business

entrepreneur. Since modern industry is controlled by the entrepreneurial class, whatever period is profitable to them must necessarily be a period of great industrial activity and prosperity, regardless of how other classes may be affected.

Now a period of rising prices is always a period of profit making, and this is true particularly for the reason that in a period of rising prices the spread between costs and selling prices is widened. Wages and rents particularly lag behind selling prices, and thus the margin of profits is increased. The opportunity for profit making thus afforded stimulates production and industrial activity ensues. Thus the process of producing goods is subordinated to the process of making profits, and the prosperity of society is viewed through the spectacles of the profit receiving class.

Enigma

The Enigma of Unemployment

Here we encounter the greatest enigma of modern industrial society, viz., the failure of the existing industrial organization, except in brief periods of the very greatest prosperity, to utilize to the full its productive power. Much is said about the scarcity of labor and the lack of industrial equipment, yet it is estimated by Secretary of Labor Wilson that there are from one to three million workmen who are employed or unemployed according to our position in the cycle of prosperity and depression. Another estimate¹ places the figures at from one to four and one-half million. Everyone is familiar with the spectacle of plants running at low percentage

capacity. The industrial cycle is an index of the extent to which we are utilizing to the full our productive power. In recent decades, probably, there have been only two periods in which we have measurably approached our full power to produce, the period of intense prosperity in 1906 and 1907 and the period of the recent war. The extent to which we normally fail to utilize our productive capacity becomes evident when we consider the increase of production that took place during the war despite the withdrawal of over 4,000,000 men into the service. The reliable data worked out by Wesley C. Mitchell² indicate that our physical production in the war years 1917 and 1918 exceeded our physical production in 1913 by 14 per cent and 16 per cent respectively. It has been estimated³ that this increase in production was sufficient to cover the cost of the war in tangible goods without reducing either our normal supply of capital equipment or the average standard of consumption.

The cycle of prosperity and depression is the record of industrial activity. In the modern industrial society this cycle is a continuous process which finds its expression in the movements of money, credit, prices, profits and production. An analysis is here presented of monthly data pertaining to the above mentioned movements for the years 1915-1919. The following series are included in the study:

1. Ratio of reserves of Federal Reserve Banks to net liabilities.

¹ Mitchell, *History of Prices During the War, Summary*, War Industries Board, Price Bulletin No. 1.

² Viner, "Who Paid for the War," *J. of Pol. Econ.*, January, 1920, p. 58.

³ Hornell Hart, *Fluctuations in Unemployment in Cities of the United States, 1902 to 1917*, Helen S. Trounstone Foundation, Cincinnati.

2. Total reserves of the Federal Reserve Banks.
3. Total deposits of the Federal Reserve Banks.
4. Federal Reserve notes in circulation.
5. Deposits of New York clearing house banks.
6. Loans of New York clearing house banks.
7. Money Rates on 4-6 months prime commercial paper.
8. Prices of twenty industrial stocks.
9. Prices of twenty copper stocks.
10. Industrial dividend payments.
11. Production of pig iron.
12. Production of copper.
13. Unfilled tonnage of U. S. Steel Corporation.
14. Exports.
15. Wholesale commodity prices.

The data pertaining to the Federal Reserve System were taken from the *Commercial and Financial Chronicle*, and the figures for the other series were obtained from *Babson's Desk Sheet of Tables and Charts*. The actual figures, with the exception of the ratio of reserves to liabilities, were in each case reduced to relative figures or index numbers for the purpose of comparison. The months of June and July, 1917, constitute the mid-point of the period under consideration, and the average of the figures for those two months has, in each series, been taken as the base. It will be noted that the first half of the period corresponds substantially to the period of American neutrality, and the last half is the period of American participation in the war.

MOVEMENTS OF THE MONEY MARKET

Prior to the establishment of the federal reserve system the surplus

reserves of the New York clearing house banks constituted the primary index of the condition of the money market. Since the establishment of the reserve system, the reserves of the member banks are replenished through the process of re-discounting at the federal reserve banks. Bank credit rests, therefore, ultimately on the reserves of the federal reserve banks and not on the reserves of the member banks.

Table I gives the index numbers worked out as explained above for money rates, total reserves of federal reserve banks, deposits of federal reserve banks, federal reserve notes, loans and deposits of the New York clearing house banks, and the actual per cent for the ratio of reserves to liabilities. Federal reserve notes do not begin to assume any large proportions until the middle of the period under consideration. The ratio of reserves to liabilities is limited to deposit liabilities for the months June to November, 1917, otherwise liabilities include federal reserve notes in circulation.

It will be noted that reserves expanded enormously during the greater part of the period. This was made possible by the huge importation of gold, amounting to a total of \$1,200,000,000, during the period of American neutrality. The jump in reserves immediately following our entrance into the war resulted from the rapid impounding of gold into the federal reserve banks. Under ordinary conditions it is usually found that surplus reserves rise with an increase in reserves, and money rates, therefore, usually move in inverse ratio to reserves. In this case, it will be noted that money rates and reserves moved

TABLE I. MONEY MARKET CONDITIONS

(Index numbers, base June-July, 1917; actual percentages are given for the ratio of reserves to net liabilities.)

	Ratio of reserves to liabilities	Money rates	Reserves federal reserve banks	Deposits federal reserve banks	Notes federal reserve banks	Deposits New York banks	Loans New York banks
1915							
January.....	93.3	80.6	19.3	19.6		59.7	57.1
February.....	96.7	75.6	20.9	20.2		63.7	59.4
March.....	91.0	70.6	19.8	20.1		66.0	61.6
April.....	89.3	75.6	19.8	20.6		67.6	62.0
May.....	93.3	74.0	20.6	20.4		67.9	62.0
June.....	97.4	74.0	22.8	20.9		71.1	67.7
July.....	91.8	73.1	21.6	21.4		73.8	66.9
August.....	88.2	73.1	21.6	22.2		76.9	60.2
September.....	88.7	68.0	23.5	23.1		81.6	72.2
October.....	87.5	65.5	23.9	25.1		91.8	78.6
November.....	86.9	63.0	26.9	28.9		94.1	82.7
December.....	89.1	65.5	27.2	28.9		94.5	83.8
1916							
January.....	80.8	63.0	27.4	31.8		96.5	85.0
February.....	80.4	60.5	26.9	31.2		97.3	85.7
March.....	76.0	63.0	26.6	31.7		96.5	86.1
April.....	72.2	65.5	24.3	31.8		96.1	86.8
May.....	70.1	65.5	27.0	36.4		93.4	86.1
June.....	73.4	74.0	30.4	37.3		91.0	84.2
July.....	69.9	88.2	28.6	38.2		87.1	81.2
August.....	70.6	75.6	28.0	38.6		88.6	81.9
September.....	71.0	73.1	29.7	39.2		91.8	85.3
October.....	72.8	73.1	30.6	40.7		92.9	86.5
November.....	75.3	70.6	36.0	46.3		95.7	88.3
December.....	70.7	80.6	34.3	47.0		91.8	86.1
1917							
January.....	76.3	70.6	40.3	49.9		99.2	88.7
February.....	73.6	83.2	38.5	49.3		101.2	90.6
March.....	81.2	90.7	43.1	51.1		103.1	92.9
April.....	74.2	90.7	41.5	57.3		105.1	95.1
May.....	67.8	98.3	76.3	74.1		100.4	93.6
June.....	68.4	103.3	93.7	100.6	96.8	99.6	99.6
July.....	78.8	96.8	106.3	99.6	103.3	100.8	100.7
August.....	79.9	100.8	105.7	97.4	113.9	101.5	101.1
September.....	74.5	108.4	109.5	97.3	129.6	100.4	103.4
October.....	70.3	113.4	116.6	112.2	164.2	116.4	124.4
November.....	62.8	110.9	126.0	129.9	196.5	132.4	166.2
December.....	63.6	113.4	127.5	127.9	237.5	136.3	164.6
1918							
January.....	65.4	115.9	134.0	129.0	239.0	141.4	159.9
February.....	66.0	115.9	137.8	124.0	254.5	139.8	156.4
March.....	63.4	121.0	139.9	131.5	276.8	142.2	160.5
April.....	61.3	121.0	142.2	136.0	295.5	144.5	163.5
May.....	62.0	121.0	148.5	139.5	310.0	142.9	168.4
June.....	63.4	121.0	148.8	144.0	324.8	144.5	166.5
July.....	57.9	121.0	153.7	151.0	378.5	139.8	162.0
August.....	56.4	121.0	155.4	149.5	405.0	139.8	165.8
September.....	51.6	121.0	155.8	163.0	454.0	144.5	168.8
October.....	49.6	121.0	157.5	180.5	486.0	146.1	173.7
November.....	50.0	121.0	159.3	168.0	497.0	146.5	175.5
December.....	50.6	115.9	160.4	165.9	516.0	149.6	172.9

TABLE I. MONEY MARKET CONDITIONS—*Continued*

	Ratio of reserves to liabilities	Money rates	Reserves federal reserve banks	Deposits federal reserve banks	Notes federal reserve banks	Deposits New York banks	Loans New York banks
1919							
January.....	53.0	108.4	163.8	164.4	474.0	152.3	176.7
February.....	51.3	103.3	164.5	171.2	478.0	147.2	176.7
March.....	51.6	108.4	166.0	179.4	486.0	151.2	180.1
April.....	51.7	108.4	168.0	169.8	493.0	154.3	180.8
May.....	51.8	105.8	169.2	172.5	487.0	157.8	183.8
June.....	52.5	110.9	168.0	183.0	482.0	155.1	181.6
July.....	50.5	110.9	162.0	175.0	485.0	157.0	184.2
August.....	50.7	108.4	161.0	171.0	499.0	155.8	184.2
September....	51.0	108.4	164.5	177.8	513.0	161.3	191.7
October.....	47.9	105.8	165.8	190.5	532.0	162.5	199.6
November....	45.5	113.4	162.4	202.8	552.0	162.5	195.5
December....	44.8	118.4	160.5	194.2	592.0	159.0	191.3

together, for, while reserves were mounting up, deposits and federal reserve note circulation were increasing at a still greater rate. This is indicated by the movement of the ratio of reserves to liabilities which progressively declined in spite of the expansion of reserves. Therefore, even though reserves rapidly accumulated, the money market became tighter and money rates became higher. Only during the year 1915 and the early part of 1916 did the ratio of reserves to liabilities run very high and money rates low. Beginning with the latter part of 1916 and extending to the close of 1918 the demands made upon the money market were so great that in spite of added reserves the ratio of reserves to net liabilities declined and money rates moved up. Further inflation of banking credit was measurably stopped by the close of 1918. The ratio of reserves to liabilities ran nearly uniform from September, 1918, to September, 1919, and for the first ten months of 1919 money rates ran correspondingly on a fairly level course. At the close of the year banking credit was still further strained and rates became higher.

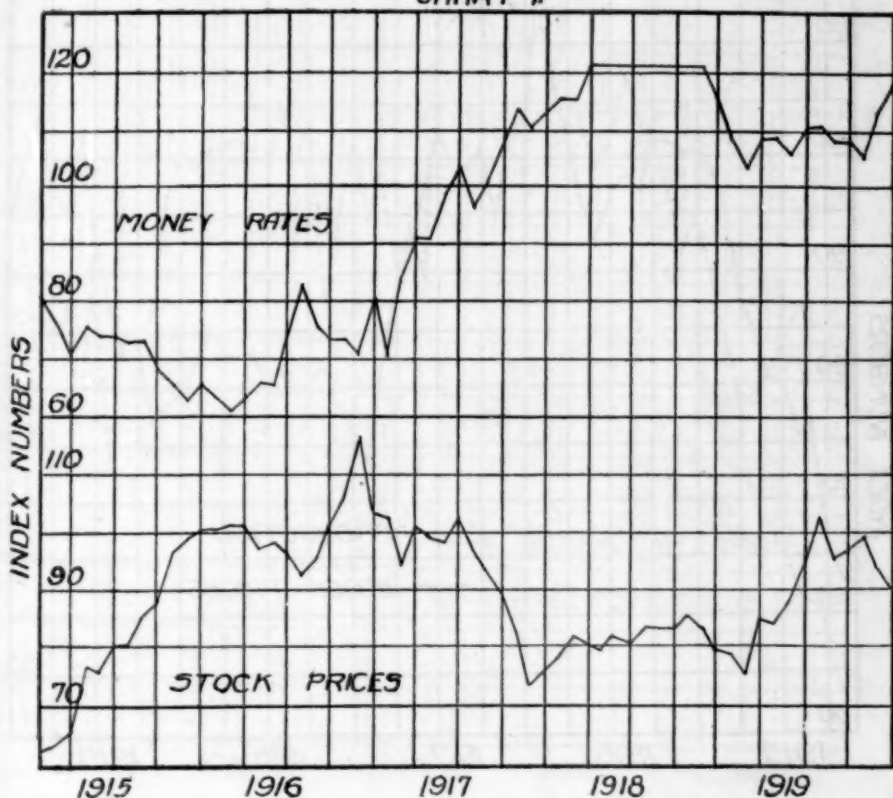
Money Rates, Stock Values and Profits

The relative movements of money rates and industrial stock prices are shown in Chart I. The index numbers for the industrial stock prices were constructed by averaging the prices of twenty industrial stocks and twenty copper stocks. The curves are placed in juxtaposition to bring out more clearly the inverse correlation. The two most fundamental factors affecting stock values are the current rates on the money market on the one hand and the trend of corporate profits on the other. Stock prices move in inverse ratio to the former and in direct ratio to the latter as appears in Chart II, since production may safely be accepted as a reasonably accurate index of the trend of profits. The production index numbers are the simple arithmetic average of production of pig iron, production of copper, unfilled tonnage of the U. S. Steel Corporation, and exports. It is an index, therefore, of the production of war materials rather than of production in general. General production of course did not increase in any such proportions. A comparison was made

of the production index with industrial dividend payments averaged quarterly as a further evidence of the trend of profits. Production reached the trough of the wave in December, 1914, and rapidly rose during 1915 in response to the war demand of the allies. The period of maximum production of war

The two charts then indicate the relation between stock prices and money rates on the one hand, and production and profits on the other. Assuming profits as constant, stock prices would fluctuate inversely with the movement of money rates. Assuming money rates as constant, stock

CHART I.



materials was during 1916 and the first half of 1917, the peak being reached toward the end of the period of American neutrality. With the readjustments incident to the entrance of the United States into the war and the consequent withdrawal of men from industry, production declined somewhat, but rose again during 1918. The last year brought a heavy decline,

values would fluctuate directly with the movements of profits. The influence of both factors are apparent in the trend of stock prices and, on the whole, tend to reinforce each other.

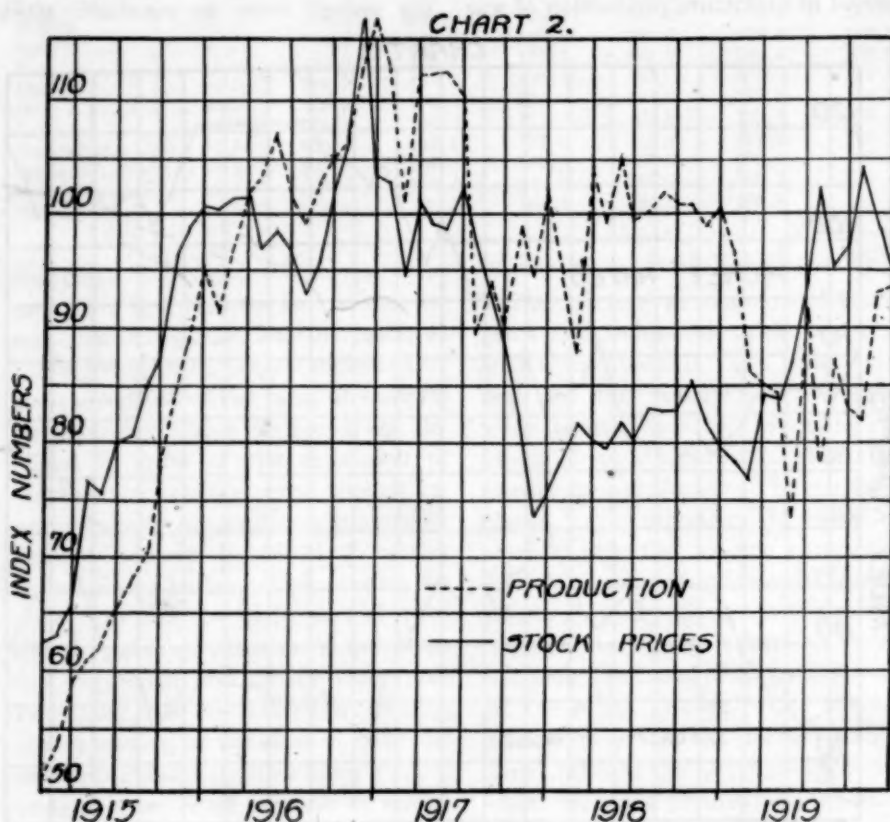
INFLATION AND PRICES

The remarkable expansion of production occasioned by the European demand for our goods brought with it

inflation of bank credit. The Europeans paid for our goods, mainly, in two ways: (1) by sending us gold and (2) by selling us securities. This enormous importation of gold resulted in a surplus of reserves and forced a decline in the rate of discount during

inevitable result was a general rise in prices.

Chart III shows the curves for inflation of bank credit and for commodity prices at wholesale. The credit inflation index is a simple average of the deposits and loans of the New York



the year 1915. The banks were in a position to generously extend loans, the war industries rapidly expanding needed funds, and the purchased securities were at hand to serve as convenient and adequate collateral. Thus the European war trade furnished not only the stimulus for increased production but also the means for rapid inflation of bank credit. The

clearing house banks. This average has been used in preference to the credit expansion of the federal reserve system because of the fact that the reserve system practically started from nothing at the beginning of our period, and, therefore, the relative expansion that took place in that system was out of all proportion to the general expansion of credit in the country as a

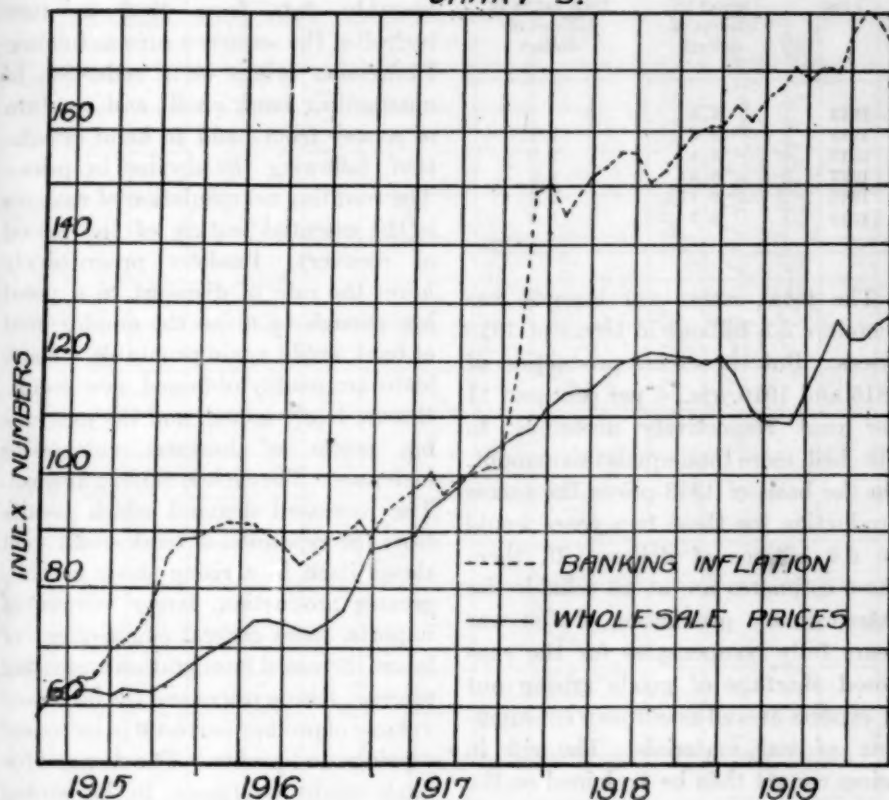
whole. The price index is Bradstreet's index of wholesale prices.

Inflation and Shortage of Goods

The opinion appears to be held quite generally that the recent enormous advance in prices is the result of a

index of physical production, Viner estimates⁴ that the aggregate increase in production from January, 1917, to May, 1919, was 10.8 billions of dollars in terms of 1913 prices. The total estimated cost of the war for the corresponding period in terms of

CHART 3.



shortage of goods occasioned by the war. If Mitchell's estimate of the increase in physical production during the war is correct it appears that after subtracting the war materials consumed by the United States, as well as the excess of materials sold to our allies, the physical product or supply of goods remaining is little if any lower than before the war. Using Mitchell's

1913 prices he finds to be 10.4 billions of dollars. If this estimate is reasonably correct, no shortage of goods occurred in the United States because of the war.

It may still be argued, however, that the enormous excess exports of the period 1915-1919 must have resulted in a shortage of goods. Following is an

⁴ Viner, *J. of Pol. Econ.*, Jan. 1920, p. 58.

estimate of the value of our excess exports in terms of 1913 prices, using the wholesale price index of the Bureau of Labor Statistics as the means of conversion to the 1913 basis.

Year	Exports on basis of 1913 prices in billions of dollars	Excess war exports on basis of 1913 prices in billions of dollars
1913	2.5	
1915	3.6	1.1
1916	4.4	1.9
1917	3.5	1.0
1918	3.1	0.6
1919	3.7	1.2

The total excess war exports was therefore 5.8 billions in terms of 1913 prices. But the excess production of 1915 and 1916, viz., 7 per cent and 11 per cent respectively according to Mitchell, more than equals this amount. On the basis of 1913 prices the excess production for these two years would be 6.2 billions of dollars. If, then, these estimates are at all reliable the extraordinary production of the war years fully compensates for the supposed shortage of goods arising out of exports as well as our own consumption of war materials. The rise in prices cannot then be explained on the basis of shortage of goods. It can only be accounted for on the basis of inflation of currency and credit. The importation of over a billion dollars of gold, and the credit creating capacity of the federal reserve system made enormous inflation inevitable in the absence of rigid governmental regulation. Thus prices rose with the volume of currency and bank credit,

THE NORMAL SEQUENCE IN THE BUSINESS CYCLE

The normal sequence of the banking, investment and industrial movements of the business cycle are completely upset by the unusual conditions arising out of the war. Normally, as found in a study made by the writer of monthly data from 1902 to 1908 inclusive, the sequence runs as follows: Depression brings on a reduction of outstanding bank credit and a return of money from hand to hand circulation, following the decline in prices. The resulting accumulation of reserves is the essential feature of the period of recovery. Bankers progressively lower the rate of discount to a point low enough to make the employment of bank credit again profitable. Bank loans are readily obtained, new securities are freely issued, and the purchasing power of business enterprises increases. The cycle is moving upward. The increased demand which results from the expansion of bank credit soon shows itself in a rising stock market, greater production, larger volume of imports, more general employment of labor, increased immigration and rising prices. Rising prices and the increased volume of production result in increased earnings and profits. The demand for bank credit continues to be strong while prices are rising. But rising prices result in more money being drawn out into hand to hand circulation. There follows, therefore, an actual diminution of reserves at the very time when bank credit is being extended. It therefore becomes necessary not merely to stop the expansion of bank credit, but actually to reduce the outstanding volume. The demand for bank credit is not lacking but the

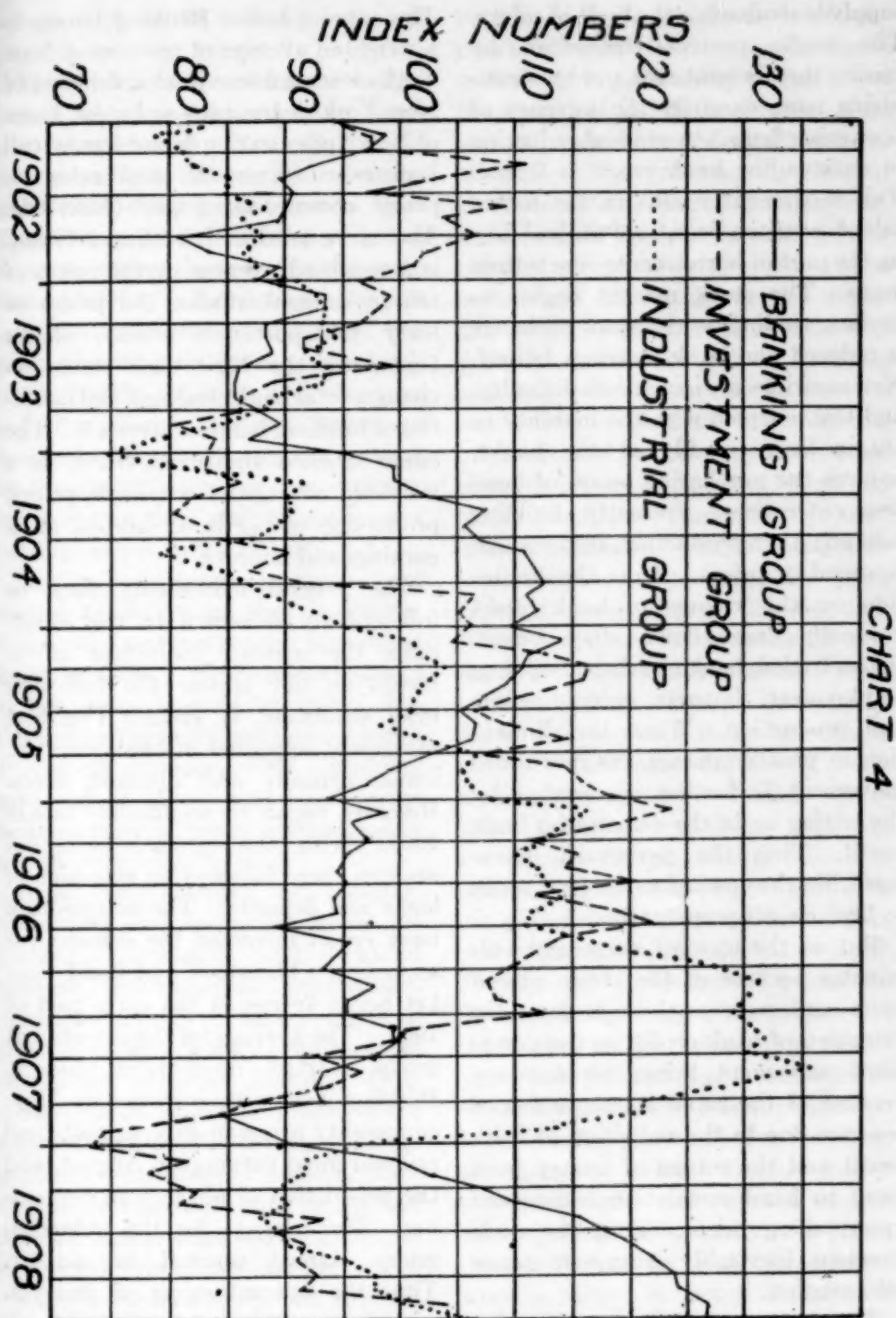


CHART 4

supply is strained to the limit of safety. The banks protect themselves by raising the discount rate and by scrutinizing more carefully the solvency of borrowing firms. A gradual reduction in outstanding bank credit is forced. This movement results in the forced sale of securities because of the inability on the part of borrowers to renew their loans. The stock market begins to decline, trading on the stock exchange is reduced and bank clearings fall off. New securities are issued with difficulty, and this, coupled with the inability to obtain loans readily at the banks, reduces the purchasing power of business enterprises. Presently, building falls off; then production, imports and commodity prices. Thus the limitation on the volume of bank credit gradually drags down stock prices, shares traded, bank clearings, building, employment, imports, prices, profits and production. When the diminution in profits appears, the downward movement is further accelerated by the letting up in the demand for bank credit. Thus the downward movement, like the upward movement, tends to become self-perpetuating.

But as the upward movement culminates because of the strain placed upon bank reserves through an undue extension of bank credit, so the downward movement brings on recovery because of the rapid accumulation of reserves due to the reduction of bank credit and the return of money from hand to hand circulation consequent upon falling prices. Thus the cycle develops inevitably from one phase into another.

The above analysis finds verification in Chart IV. Seasonal fluctuations have been eliminated in these curves.

The curve labelled Banking Group is a weighted average of reserves of New York clearing house banks, deposits of New York clearing house banks, loans of New York clearing house banks, call loan rates (inverted), and rates on prime commercial paper (inverted). The curve labelled Investment Group is a weighted average of the prices of ten investment stocks, the prices of forty transportation stocks, shares traded on the New York stock exchange, total bank clearings, and liabilities of business failures (inverted). The curve labelled Industrial Group is a weighted average of wholesale prices, production of pig iron, railroad gross earnings and imports.

The general movements may be followed by reference to the chart. Since the separate individual movements do not appear the following brief statement is given. The first movement appeared in bank reserves, loans, deposits and discount rates. Reserves began to accumulate late in 1903. With the upward swing of reserves there followed an extension of loans and deposits. The extension of bank credit increased the demand for securities. The stock and bond market began to rise in the early part of 1904. The average for the investment group started upward in March. Building began to increase in May, commodity prices in July, imports and railroad gross earnings in August, and the production of pig iron in September. The average for the industrial group started upward in August. Thus the upward swing of reserves, and the expansion of loans and bank credit, consequent upon the easing up of the rate of discount, pulled up one

by one stock values, prices, profits, and production.

The downward movement again began with reserves, deposits, loans and discount rates. The reduction of bank credit affected the security market and stock prices began to drop. The average for the investment group began to move downward in the early part of 1906. Industrial activity still continued to increase for a time, but gradually the inability to obtain bank credit readily or float new securities had its effect. Building began to decline in May, 1907, and the average for the production of pig iron, imports, commodity prices and railroad gross earnings began to fall in July.

Similar facts appear in the upward movement following the depression. The banking group started upward at the close of 1907. Stock prices followed in the early months of 1908. The average for the investment group began to rise in January, 1908. Building increased in March and the average for the industrial group started on the upward movement in June.

Here the interplay of banking, investment and industrial forces are working themselves out without external governmental interference. Industrial activity is held in check or speeded up according to the business possibilities of profit making. Only in the period of rising prices is the ability to sell at a profit equal to the productive capacity of society. Production rises and falls with prices, and prices in turn rise and fall with the ebb and flow of the money market.

What is the reason for this ebb and flow? Banking institutions alone, excepting the government, have the power to create money or its substi-

tutes, *i.e.*, to issue notes or create demand deposits. In other words, banks manufacture purchasing power. But the supply of this bank product in no way depends upon the multiplication of banks. The possible expansion of bank credit is restricted, within somewhat flexible limits it is true, by the physical volume of gold reserves in the nation and ultimately in the world. The supply of bank credit is in no way dependent upon the cost of banking, and only slightly upon the cost of production of gold since the annual production of gold is very small compared to the total supply. Therefore, banks place no "reservation prices" upon bank credit. They will sell it for whatever they can get. The price depends purely upon the demand. When loans are being reduced and reserves accumulate banks must reduce the price (rate of interest) in order to dispose of all their wares (bank credit). The reduced price of bank credit again makes production profitable. Loans are called for, securities are issued, the purchasing power of business is increased, prices rise. Selling prices rise sooner and faster than cost prices and profits are increased. The upward movement of prices for the time being releases the pressure of production on profit making. Prosperity is in full swing and continues to be until bank credit has expanded to its limit and a halt is called to the rising movement of prices. Profits decline and bank loans are reduced until a fresh accumulation of reserves starts another cycle. It is as though you threw a ball to which is attached a rubber band. The rubber band pulls back the ball with the same force with which it is thrown. And were it not

for the force of gravitation the ball would continue to bound and rebound.

The War Sequence

Thus under normal conditions, when the motive of profit making controls industrial activity, productive capacity is utilized to the full only in the period of inflation of bank credit and rising prices, and this inflation inevitably finds its termination in the limitation of bank reserves. But the war introduced a new factor in production and inflation. It was no longer wholly a question of reserves or profit making. It was a question of national need. Hence the war sequence did not run from reserves to loans, deposits, issue of securities, and thence to prices, profits and production. Purchasing power was no longer limited by the physical volume of reserves. Government credit entered the field directly in the form of paper money in many countries, and everywhere indirectly through taxation and the issue of

treasury notes and bonds. Reserves were no longer the limit of prosperity and inflation. The limit was the sky, and for proof witness the paper inflation in Europe.

The inflation arising from the war need might, no doubt, have been restricted to a considerable extent by a greater resort to taxation with less reliance on bond issues as a means of financing the war, or by the selective conscription of labor and capital for war production. But either method would have had a tendency to reduce production. The taxation method, by compelling greater economy, would have reduced the demand for goods non-essential for war purposes. And the industrial conscription method would, by compulsion, have reduced the quantity of production of such goods. In short, the greatly increased production of the war period would have been impossible without considerable inflation.

The Cause and Process of Inflation

By GEORGE E. ROBERTS

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CREDIT EXPANSION AND PRICES

THE general level of commodity prices has risen since 1914 to figures about double those of that year, and bank loans and bank deposits have risen in about the same proportion. What is the connection between the volume of currency or bank credit and prices? We have one group of people contending that the rise of prices has resulted from the increased use of credit, and another group holding that the higher price level has compelled the expansion of credit. In other words, one side treats the higher prices as a result and the other side treats them as a cause. Evidently there is a relationship between the price level and the volume of the media of exchange and at least superficial reasons may be found to support either side of the argument. Once the joint movement is started, the controversy is somewhat like the old one as to which came first, the egg or the hen.

The principle involved is the same as in the historic controversy over the depreciation of Bank of England notes about one hundred years ago. Specie payments had been suspended so long that the relationship between Bank of England notes, prices and the gold standard had become obscure. Those who defended the policy of continued suspension argued that the situation was perfectly normal as far as the operations of the bank were concerned; the only trouble was that in the existing state of trade the need to make pay-

ments on the Continent caused gold to command a premium over bank notes. They insisted that there was no inflation of the circulating medium; no more notes were being issued than were required for the transaction of business, and the bank was making no loans except for proper and necessary business purposes; hence, there was nothing to do about it.

They did not realize that they had lost their bearings; they were judging the need for credit by the demands of an abnormal situation. England was off the gold basis, the paper currency was inflated and depreciated, prices were inflated and of course the demand for credit was just as great as though conditions had been normal. The famous Bullion Report, by Lord Liverpool's committee, pointed out the fallacy of judging the state of credit or of currency merely by the amount required to carry on business at the existing level of prices. That criterion is unsafe unless the price level is related to the gold standard, or some other concrete standard. To allow the volume of currency to be regulated by the demand, while the demand in turn is dependent upon values and the values are dependent upon the volume, is traveling in a circle.

Means of Reducing Inflation

Surely there can be no question that the purchasing power of a currency which has no definite relation to gold, or to any concrete standard, is depen-

dent upon the volume put into circulation. Currency issues are usually under the control of some authority and regulated to supply a circulating medium which will itself sustain a fixed relation to the standard of value and therefore a normally stable level of prices, but where not regulated according to this policy, but simply paid out upon governmental expenditures, the purchasing power inevitably declines. Every additional issue dilutes and diminishes the value of all that is outstanding. Once issued it stays out until it is redeemed, not necessarily in gold, but by cancellation which involves a contraction of credit. If the notes are issued by a central bank it is in the process of granting credit, and the notes may be retired in payment of the credit. But this means that the only way to reduce inflation is by producing and saving wealth and applying it to the cancellation of credit.

The economic offense in printing money to carry on the expenses of a government is in attempting to get something for nothing. That cannot be done in any economic sense; there is always a settlement somewhere by somebody. The people must pay in some manner for whatever their government expends. If it prints money to meet its payments, they suffer in the corresponding depreciation of all the outstanding paper issues. If it creates and uses purchasing power in any other form of credit, the effect upon prices is the same.

This effect upon prices or, in other words, the resulting depreciation of the purchasing power of credit, follows from an attempt to use a large amount of purchasing power without any

corresponding increase in the supply of things to be purchased. The effect of inflation upon prices is not a mysterious or occult phenomenon peculiar to currency, but simply a phase of the familiar operations of the law of supply and demand. In so far as an increased supply of currency is called for by a more general state of industrial activity and a more complete industrial employment of the population, "expansion" is the proper term to describe it; "inflation" begins when the amount of credit in use is not required and offset by greater production and a corresponding increase in the amount of commodities to be handled.

THE WAR AND PRICE INFLATION

Wages and Prices

The original cause of the recent rise of prices undoubtedly was the war. It created a practically unlimited demand for man-power, equipment and supplies. The first effect was to take up whatever slack there was in the industries, and if the demand had gone no further, the effect upon wages and prices would have been but slight. But it could not be stopped at this precise point. It soon assumed the form of a competitive struggle for labor and materials. The government let the contracts for its cantonments, which were located in all parts of the country, on a cost-plus basis, and the contractors proceeded to offer wages which would attract labor from other employments. Then came the contracts for munition works, gun works, aeroplane factories, shipyards and equipment of all kinds. And the demand for labor in the ordinary industries did not fall off. The enormous expenditures of the government

poured more money into the regular channels of trade; the demand for goods for private consumption increased, and the makers of such goods struggled vigorously to hold their employees against all competitors, including the war industries. In short, there was a practically unlimited, competitive demand, playing upon a strictly limited supply of labor and materials, and a great rise of wages and prices was the natural result.

This is the basis for the contention that the inflation of credit followed and resulted from the rise of prices and did not contribute to it, but the contention goes too far. Those who hold that an increased supply of credit will promote higher prices are free to admit that it is the *use* of the increased supply, and not the mere fact that the supply is available, which makes prices rise. But they point out that if the increased supply of credit was not available it could not be used, and that under the war-time conditions, if freely available, it was certain to be used and certain to force up wages and prices. The heedless attempt to drive the industrial machine beyond its physical capacity caused the inflation. Because of enormous pressure for goods we turned into the channels of industry and trade twice as many dollars as had been in use before, each representing nominally the old purchasing power.

Bank Credit Expansion and Production

The available information indicates that production in this country increased but slightly after the United States entered the war. It increased in some lines by drawing labor from others, but not much on the whole. There was a great expansion of bank

credit, however, for the purpose of financing the competitive struggle over the limited supply of labor and materials. This expansion furnished competitors with the means to bid against each other and thus contributed directly to the rise of prices, while contributing very little, if at all, to production. We had a grand scramble for labor and materials instead of an organized scheme of utilizing our industrial forces.

If a single family, living in a position of partial economic independence, as on a farm, should suddenly face reverses or the necessity of making heavy non-productive expenditures, it would know immediately what it would have to do. It would have to work harder, produce more, live more economically, and have a larger surplus with which to meet the new demands upon it. The economic law is the same for a nation as for a family, but there is not the same ready apprehension of the facts. Our people did not understand that the outlays upon the war must be met by increased production and greater economy. They thought that they could go to the banks and borrow for the government loans and even to pay their taxes, and but for a few gasless Sundays and some economy in the use of sugar, flour and a few other commodities which we were required to share with our Allies, they expected to go on about as usual. Indeed, in business circles it was argued that business must go on as usual in order that the war taxes might be paid.

This is not written in criticism. We were no different from other peoples in this respect. There is no such popular knowledge of economic law as would be required to suddenly reorgan-

ize a nation to meet the emergency of war without inflation. That would mean the most resolute and abstemious voluntary self-denial on the part of every person, in order that the industrial resources of the country might be turned over to governmental uses, or there would have to be an arbitrary seizure of the industries and commandeering of the population. Inasmuch as the public would not understand the reasons for such a course, it may be assumed that it could not be followed without an amount of contention and dissatisfaction that would have seriously interfered with its effectiveness and perhaps lessened the power of the country in the war. In other words, the conduct of a war without more or less inflation is impossible.

Borrowing as a Cause of Inflation

This admission, however, is outside of the argument that the free use of bank credit, with the failure to coördinate and control industry, and the wholesale promotion of competition over labor and materials, contributed largely to the rise of wages and prices and the cost of the war. This contention is not answered by simply saying that the rise of wages and prices required the use of more credit. It is necessary to go back of the rise of wages and prices and take account of the fact that, while every employer was interested in increasing his own output, he could only increase his working force by hiring labor away from his competitors, and that the labor turnover had reached proportions never before approached. In the last analysis this was the situation largely responsible for rising prices and the demand for more credit. [This bor-

rowing for the purpose of enlarging the output of an individual plant, but which did not increase the total production, was pure inflation.

Now that we have this inflated state of credit, how are we to get rid of it? Upon the theory of those people who hold that a supply of currency or bank credit is analogous to a supply of railway cars an increased supply of currency, having no greater influence in creating business than the latter, all of this inflation will disappear as soon as conditions in production work back to normal, or when a period of depression comes. But the analogy is unsound. There is a difference between idle money or bank credit and idle railway cars. The latter are instruments of carriage, pure and simple, but idle capital or credit can be made effective in creating business. They can be used in different ways and shifted to different fields. Their owners are never content to have them idle for long.

This great body of outstanding bank credit can only be retired as it is cancelled by earnings and savings and by liquidation of the stocks of commodities held against it. A fall of prices would reduce the amount of credit necessary to carry new stocks in the future and make cash resources go farther, but it would involve losses upon existing stocks.

Payment and Elimination.—It is difficult to make people see that the existing great volume of bank deposits must be reduced in precisely the same manner as an over-issue of paper currency would be reduced, namely, by payment and elimination. The deposits were created by the loans and should be used in part to pay the loans.

That would bring banking conditions back to where they were when the inflation began. When a man borrows \$10,000 at a bank and takes credit for it in his account, the deposits as well as loans of that bank go up \$10,000, and when he checks it out the deposits of other banks will go up correspondingly, and that \$10,000 of credit will stay in circulation, precisely as though it were paper money, until \$10,000 of real savings—capital—is devoted to its elimination.

This makes deflation slow business. The people have become accustomed to using more credit. The new banking system, which makes for a more economical use of reserves, favors a larger use of credit than under the old system, and the profits of bankers will be enhanced by having their funds fully employed. In order to secure deflation, the banks should take up the slack as fast as the demand for credit relaxes and not let it out again; but banking in the United States is on a highly competitive basis, and the probability is that when money becomes easy the bankers will reduce interest rates and compete sharply to get their funds into use.

The process of deflation is complicated also because we are involved in a world situation and subject to the play of world influences upon prices, credits and gold reserves. In the past we never lost gold in large amounts, except to Europe, and we had a considerable degree of control over that movement by reason of the fact that the European market would always take our securities at a price. Now, we have a fair degree of control over direct European demands by reason of Europe's indebtedness to us, but new

demands for gold have developed from South America and Asia. Europe owes us and we owe South America and Asia, but we cannot use our credits in Europe to settle with our creditors. The latter are drawing on us heavily and lowering our bank reserves. Our remedy is to lower our prices and sell more goods in Asia and South America.

Nominally, the United States is on the gold basis, but that is only because of the great store of gold accumulated in the past. While it lasts we will be able to maintain gold payments. That wages and prices in this country are not on a gold basis is evident from the fact that gold production is rapidly declining. Only well developed mines which have afforded an unusual margin of profit in the past can continue to operate at present costs. The coal, copper, silver and lead operators can afford to pay present mining costs because the market prices of their products have risen, but the price of gold remains 23.22 grains to the dollar, as before the war. The production of gold in the United States has fallen below our consumption in the arts, and will continue to decline until wages and prices return to the gold basis.

EFFECTS OF CREDIT RESTRICTION ON WAGES AND PRICES

With the banking system expanded to the limit of reserves and with reserves declining, the outlook is for a continued constriction of credit. It must be considered that in a growing country, like the United States, where the volume of production and trade is constantly increasing, the volume of credit is normally increasing. If the

country is to do business on the gold standard, wages and prices must be in terms of the gold standard; in other words, they must come down, and if the volume of credit is restricted they will be eventually brought down. But what will the public have to say about this credit restriction and the effect upon wages and prices? That is the next important question.

Every period of falling prices and business depression in the history of this country has brought on an attack upon the banking and monetary systems. No other public question or

question of governmental policy is so adapted to serve the purposes of political and social agitators and revolutionaries as the money question. Will the old and insidious greenback and free silver arguments be revived and the attack on the existing gold standard be renewed? Will the \$24,000,000,000 of fresh government indebtedness—the Liberty bonds recently proclaimed as the best security in the world—be paid by common consent in gold of the existing standard, as they come due, or will there be a struggle to change the standard?

Inflation

By JACOB H. HOLLANDER, PH.D.

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THE American citizen is swiftly awakening to the meaning and import of the word inflation in relation to every-day life. Instead of being regarded as "a high-brow fancy of the professors" to be tolerantly ignored by the public and summarily dismissed by hard-headed men of affairs, it is now generally accepted as the glaring evil of our war economy—responsible for high prices, business profiteering, speculative excesses and for the economic injuries and social injustices that make up the popular unrest with which the country is now beset.

There are definite reasons for the delayed recognition of the extent and effect of inflation. On the one hand, governmental authority has systematically obscured the fact and denied the inference. At intervals, inflation has been held forth bogey-fashion as the penalty which would follow non-adoption of the official policies. But measures, frankly inflationist in effect, have been freely resorted to whenever administrative purpose or opportunist convenience dictated. On the other hand, expert economic opinion—barring a few notable exceptions—has been slow in making its influence felt. Reaction from a false scent, concentration upon a specialized formula, absorption in governmental service and perhaps the intricacy and novelty of a new type of inflation have made the economist a less prompt, perhaps a less certain guide than in other popular economic vagaries.

PRIMARY CAUSE OF INFLATION

The indictment of inflation as a consequence of fiscal bungling in our war economy rests squarely upon the doctrine that a relative increase in the volume of currency is the cause and not the effect of rising prices. With this conclusion the great body of theoretical economists and practical financiers in this country and abroad are now in agreement. A few irreconcilables still sanction the dissent which Professor Laughlin and his disciples have so earnestly and so unconvincingly set forth. Something less than this has been invoked by the Federal Reserve Board to justify the increasing note issues of the Federal Reserve Banks. But even here there has been a perceptible weakening in asseveration; and it seems not unreasonable to assume that in about the same interval of time the advocates of the English bank restriction became converts to the doctrines of the Bullion Report of 1810, and the defenders of Secretary Chase's fiat issues yielded to the logic of greenback prices—there will be admission on the part of fiscal stand-patters [that our huge creations of bank credit and note currency have been the direct cause of swollen prices.]

The facts as to inflation can be set forth in a paragraph: As compared with the spring of 1914—the eve of the World War—the people of the United States are carrying on their business at the present time with practically twice as much circulating medium and

bank deposits. There has been an increase in the actual circulating medium of the country from \$3,402,015,427 on June 30, 1914, to \$5,846,171,213 on February 1, 1920; an increase in the deposits of national banks, state banks and trust companies from \$13,430,000,000 on June 30, 1914, to \$25,731,000,000 on June 30, 1919, and an increase in the individual deposits subject to check of the national banks alone from \$8,470,747,000 on June 30, 1919, to \$9,682,618,000 on November 17, 1919. Altogether it is likely that the country is now transacting its business with \$15,000,000,000 more circulating medium and deposits than five years ago.

This huge addition to the nation's money has been for fiscal convenience and not for commercial requirement. The direct consequence of the attempt to play the business game with twice as many chips has been to cut in half the commodity-buying power of the money unit, evidenced by a rise in general prices to 249 in February, 1920, as compared with 100 in 1914.

COURSE OF INFLATION

There have been three stages in the course of our inflation, each marked by an unsound administrative policy: (a) from the outbreak of the World War in August, 1914, to the entry of the United States into the great struggle, an incoming flood of gold was permitted to serve uncorrected as the basis of a towering credit structure; (b) in the eighteen months of our active belligerency lavish supplies of fiat credit by bank loans through certificate borrowing were created in the interest of fiscal opportunism instead of economic requirement; (c)

from the armistice of November, 1918, almost up to the present the policies of the Federal Reserve Board as to credit control have been frankly dominated by the convenience of the Treasury.

From the Outbreak of the World War to the Entry of United States into Struggle

Thanks to huge exports of munitions and supplies to the belligerents and the sharp decline in commodity imports from the war area, an undreamed-of stream of gold poured into the United States during the period of our neutrality. Largely in consequence, the volume of coin, including bullion in the Treasury, increased from \$2,638,496,956 on June 30, 1914, to \$3,807,161,348 on June 30, 1918. This increase in our stock of monetary gold of more than one billion dollars was magnified by the changed reserves of the banks, consequent upon the operation of the Federal Reserve System and the gold-centralizing amendment of June 21, 1917. Had our financial administrators been more skilled in world banking, prompt attention would have been paid to the significant price movements that followed such changes. Increased reserve percentages would have been urged and higher discount rates would have been imposed to check the inflating effect of the gold flood. Nothing of this was done, and we passed from the uninformed state that marked our neutrality financing to the outright error that marred our war borrowing.

From the Entry of United States into World War to the Armistice

The worst blunder of our war-time financing, in its subsequent effect upon

social well-being, was the Treasury's large reliance upon bank borrowing during the period of active belligerency and indeed for some time thereafter. To supply itself painlessly with ample borrowed funds and to keep the money market artificially within favorable limits, a huge volume of credit currency was created by bank loans, taking the form of issues of Treasury certificates of indebtedness in anticipation of loan proceeds and tax revenues. In another place I have described the mechanism whereby this was accomplished.¹ What could at that time only be proposed tentatively can now be asserted definitely, for events have confirmed the forecast with almost startling exactness.

Through the devices of payment "by credit," redeposit of funds, exemption of government deposits from reserve requirements and preferential rediscount rates upon war paper—anticipatory certificate borrowing from the banks, as practiced by the Treasury, involved the direct creation of a volume of additional bank credit in the form of public deposits dictated entirely as to time and amount by fiscal convenience and entirely unrelated to commercial need. Such emissions of fiat credit were dispersed among individual deposit accounts in the course of public expenditure, producing a direct expansion of credit and currency without succeeding contraction incident to certificate liquidation.

From Armistice to Present Day

The inflation due to the gold flood from warring Europe in the period of

our neutrality and to the reliance upon fiat credit in connection with war borrowing in the period of our belligerency may perhaps be explained, though insufficiently, on the score of the ignorance of our financial administrators as to the potency and far-reaching effect of the great economic forces they were invoking. Not even this justification can be found for the amazing renewal in our post-war financing of the fiatism of the war period, by the resumption of certificate borrowing eight months after the armistice in accordance with Secretary Glass's program of July 23, 1919. At the time the Treasury so resumed its policy of bank borrowing the inflationist effect of such procedure had been established to the point of outright demonstration by analysis of banking operations in the United States during the period of war borrowing and thereafter. Further, such conclusions, although ignored by our financial administrators, were accepted in every particular in this country and abroad by the great body of financial experts not actually engaged in banking operations or identified with governmental financing.

Expansion of Fiat Credit

Since August 1, 1919, the Treasury has emitted issue after issue, first of "loan" (to be distinguished from Liberty Loan or Victory Note certificate) and later, of tax certificates. These were absorbed by the banks under a form of administrative compulsion and were paid for almost entirely "by credit," that is, by the creation of additional deposit currency. Enabling the Treasury to sustain its floating indebtedness only at the expense of mortgaging prospective rev-

¹ War Borrowing: A Study of Treasury Certificates of Indebtedness. (Macmillan, 1919.)

enues and of deflecting the policies of the Federal Reserve Board, the harmfulness of such fiat financing has been even greater in monetary than in fiscal influence. With each succeeding issue there has thereby been injected into the deposit currency of the country a very considerable body of fiat credit, in the form first of government deposits, and thereafter as liberated and dispersed in public expenditure, in the form of ordinary individual deposits. Such additions to the effective circulating medium of the country, let it be emphatically restated, have not been in response to the country's business needs, but have come into being because the Treasury has elected to provide itself with funds in this comfortable way rather than undergo the effort of additional funding or taxing operations. It was much in this way, for example, that for the year ending June 30, 1919, the deposit liabilities of the national banks increased by the amount of \$948,920,000 in excess of the increase in loans and discounts—an increase which the Federal Reserve Board itself recognized as "a pure credit expansion, not called for by increased industrial activity, but occasioned by the use of the banks' credit for government financing."

In commenting at the time upon the wisdom of the foregoing policy, the present writer wrote in terms which in the light of succeeding events may, at this time, be reasonably repeated: "A bitter sequel of war dislocation is that long after armies and fleets are demobilized inflated currencies and expanded credit fabrics remain. Deflation is hard in practice and painful in effect and a democracy is not likely

to have strength or to show courage enough for heroic operation. But if the Treasury be not willing to enter upon the hard, straight course of currency contraction and credit restriction, let it at least avoid the treacherous ease of further bank borrowing. At a time when corporate flotations have been crowding in swift succession and foreign governments are standing queue-like at our financial gate, it is an incomprehensible thing that our own public borrowing should revert to a form which only the desperate exigency of wartime need should have tolerated. If to this anomaly be added the fierce quest of public and private leaders for the cause of high prices, the picturesque array of culprit elements and the soft-peddalling as to an obvious and indubitable factor—one may venture that the next-century New Zealander will musingly recognize that the lamented Phineas T. Barnum plumbed the depths of the American mind."

EFFECT OF INFLATION ON ECONOMIC CONDITIONS

The bitter penalty of inflation is that its evils are, in the main, beyond remedy. Like some tissue-destroying malady of the human body, it changes the whole functional life of the society which has suffered its ravages. We can never completely recover from the credit orgy of the past five years, nor return to the economic condition from which it has dislodged us. In the sense of a complete and final antidote, deflation is an academic term. In actual practice, the business world would never stand the stress of crumbling markets, the debtor class would never bear the burden of falling prices, the public treasury would never

endure the load of heavier debt burden.

Methods of Recovery

But if complete deflation be a counsel of perfection, there are certain wholesome things that can be done, and it is upon these that present effort should be centered. In the first place, there should be no further recourse, under any warrant or pretext to those fiscal methods and banking practices which have up to this time encouraged or permitted inflation. To tolerate an ill is one thing; to aggravate it is another. The doctrine of practical necessity may do yeoman service in defense of unsound war-time policies; it may not be as securely invoked in the calmer years that follow.

In the second place, there should be no placid acquiescence in the existing state of affairs and no tolerant unconcern as to the courses which have brought us here. Responsibility for inflation should be definitely and specifically assigned to persons and policies—this in no vindictive sense,

but that there may hereafter be complete avoidance of like error. It was the effective indictment of Secretary Chase's greenback policy that, more than anything else, has since saved us from descent to inconvertible paper. It is only by full clear recognition that the fiscal methods of the past five years have brought us to our present pass that sure protection will be afforded for the future.

Finally, though we may not fully retrace our steps or undo the largest mischief that has been done, yet our faces should be set in the true direction. The great evil of inflation has been social injustice. To atone in part for this by a gradual but courageous contraction of bank credit, with its reasonably certain consequence of an appreciating money unit as speculation is checked and production increases—is a wise and just policy. If we neglect this, under the influence of financial convenience and business advantage, we shall be dropping back again into the old vicious cycle of class exploitation and social reaction.

PREFACE

THOUGH the present extreme confusion of the whole economic life of the world must without doubt be ascribed to several different causes, the general disorder of the monetary system seems to be one of the most essential of them. It is essential in that absolute sense that it is vain to look for any real or permanent improvement of the present conditions of production and trade if not a certain stability is previously restored to the world's monetary standards. This, therefore, is a problem which ought now to command the first interest and the most arduous efforts of all those who are, either as practical bankers or as representatives of economic science, competent to judge on monetary matters.

It seems to be a rather general belief that the exchanges will right themselves fast enough when trade resumes its normal course. This would do, of course, if the different monetary standards could be restored to their old parity with gold. But this is, as everybody knows, quite out of the question. The monetary disturbances are much deeper than people think of when taking such an easy view of the problem before us. First of all a stable monetary standard must be established in each separate country. In so far the problem might be regarded merely as each country's own business. But in fixing such a standard every country will doubtless have a certain regard to its effect on the rates of exchange with other countries and prob-

ably also with gold. Further the gold policy of every big country will have its influence on the value of gold in the world and, therefore, on the capability of each country of giving to its money a fixed value as against gold. Thus the problem inevitably becomes an international problem.

The definite treatment of this problem will require a certain coöperation of the different nations. The first step in this coöperation should naturally be an international discussion of the matter. A conference of a strictly non-political character between leading bankers and economists of the world would, I venture to think, be the right *forum* for such a discussion. It seems desirable, however, that some principal points with regard to the actual nature and the causes of the disturbances as well as to the measures to be taken should previously be brought under the notice of those interested in this matter. In order thus to further an inquiry which seems to be, in the present situation, of the utmost importance for the economic future of the world, I venture to offer, on the following pages, some leading propositions on the present monetary question. I have tried to be as brief as possible and have, therefore, only given the main points of the matter. Where further explanations will be needed I shall be very glad to furnish them.

GUSTAV CASSEL.

Djursholm, Sweden, September 1919.

Some Leading Propositions for an International Discussion of the World's Monetary Problem

By GUSTAV CASSEL

University of Stockholm, Sweden

THE war has been financed to a great extent by means of creating more money: partly in the form of new issues of bank-notes or state paper money; partly in the form of extended bank-credits, which could be used as means of payment. The latter method has indirectly caused a corresponding increase of the circulating medium of exchange to satisfy the increased demand for cash for smaller payments. For the proportion between the payments in bank-credits and those in cash has been pretty constant as determined by the customs of each people.

The result of the creation of new money has been, in both cases, that a new buying capacity has been put at the disposal of the government. The total buying capacity of the community having in this way been increased without a corresponding increase in the commodities to be bought, a general rise of prices has followed. With higher prices the need for means of payment has been increased proportionally and the mass of the medium of exchange which could be kept in circulation has, therefore, at every time been proportional to the general level of prices. But the *primus motor* to the enhancement of prices has always been the creation of an artificial buying capacity.

Inflation.—In this way an inflation has taken place in every one of the countries involved in the war. The

cause has been that the government has given out more for the war than it could get at its disposal in the form of real savings; and the result has been an enforced restriction of consumption by means of which real commodities have been set free for the disposal of the government. Thus inflation has, without doubt, been an effective means of war finance; but certainly a means which has caused great hardship and done much harm.

It has often been said that inflation could have been avoided if war-finance had been based to a greater extent on taxes. No doubt there is much soundness in this view. But it ought to be observed that taxes as well as loans may be paid partly by real savings and partly by credit operations involving inflation. With sharply progressive taxation of income and capital the latter method of payment of taxes has probably had a very wide application.

The process of inflation has also extended itself to neutral countries which have been, more or less, compelled to give advances to the belligerents. As long as these advances could be kept within the limits of the saving capacity of the country they would not cause any inflation. But as soon as this limit was exceeded the advances could be given only by aid of the creation of more money and the process of inflation began. Of course, extraordinary state expenditure also has had its part in this process.

Gold has not been unaffected by this general deterioration in the value of money. The masses of paper money created have pressed down the value of gold as against commodities to something about the half of what it used to be before the war. In earlier cases when a country has flooded itself with paper money, the gold has gone out to other countries. Gold thus having become more abundant in the rest of the world has without doubt lost a part of its value, but a very insignificant part. Now, when gold has been driven out from so many and big countries, there has been very narrow space left for the superfluous gold and the following depreciation of the metal has necessarily been very severe. The dollar represents at present most truly gold. The general level of prices in the United States being about 200 as against 100 before the war, the dollar has come down to something about half its old value and the same should then be the case in respect to gold. A fully reliable estimate of the value of gold as against commodities is, however, hardly possible as long as the gold movements in the world are not free.

The inflation of any monetary standard should of course not be measured by the *agio* for a metal which is itself depreciated, but by the *agio* that has to be paid for commodities, and no country must think that it has gone free from the process of inflation because it may see its way to resume gold payments.

The depreciation in the value of gold has caused some neutral countries to protect themselves against an import of gold which would have meant a further depreciation of their monetary stand-

ard. Sweden has taken the lead in this policy but has not attained its aim. Other depreciating factors, viz., more or less compulsory loans to foreign countries and extravagant state expenditure, have been quite predominating. The Swedish crown has without doubt lost far more of its purchasing power as against commodities than the dollar.

THE CAUSE OF THE GENERAL RISE OF PRICES

Decreased Production.—The creation of more money is not the only cause of a rise of prices. A reduction of the total mass of commodities to be handled by a given stock of money must have the same effect on prices, as long as this stock of money is unaltered. Such a reduction has probably taken place during the war in most European countries. If the mass of commodities decreases by 10 per cent and the stock of money at the same time increases by 100 per cent, the result must be a rise of prices from 100 to 220. The main cause of the rise of prices has in reality, as in this example, been the increased supply of money, the reduction of the mass of commodities having always played a very secondary rôle in this respect. For such a reduction is very sharp, indeed, if it surpasses the limit of say 20 or 30 per cent. But the stocks of money have been increased by 200 or 300 per cent and in the most impoverished countries even more.

If the mass of commodities in any country diminishes by 10 per cent, the stock of money of that country ought strictly to be diminished by 10 per cent also. Where this is done no rise of prices will take place. In this sense one may say that every rise in prices

is caused by a too abundant supply of the means of payment and is proportional to this abundance.

Inflation has been defined by the Federal Reserve Board of the United States as "the process of making reductions in credits not based upon a commensurate increase in the production of goods."¹ But the omission of making reductions in credits commensurate to a decrease in the production of goods must have the same effect upon prices and may, therefore, justly be called an inflation too. Thus we may speak of "inflation" in a more narrow or in a more general sense. If there has been no increase in the mass of commodities, as is probably the case for most European countries during the war, the increased supply of money represents inflation in the narrow sense. But in a wider sense inflation is measured by the rise of the general level of prices.

Popular Ideas.—The popular idea that a shortage in commodities could cause a rise of prices which would necessitate the creation of more money is obviously a fallacy. Popular explanations of the rise of prices generally start from such factors as the high costs of transportation, the prohibition of imports, the diminished output of labor, etc. Such factors can obviously have an influence on the general level of prices only in so far as they contribute to a decrease in the total mass of commodities. But so far due regard has already been paid to these factors in the explanation here given. Other factors which used to be set forth in the discussion refer themselves ultimately to an increased supply of money. This is the case, *e.g.*, when

¹ *Fed. Res. Bulletin*, July 1, 1919, p. 614.

people speak of high wages, high costs of raw materials, etc., as causes of a general increase of prices. In reality there can be no other independent causes of an upward movement in the general level of prices than those two which have been stated above.

THE INTERNATIONAL EXCHANGES

The Purchasing Power Parity.—The internal value or, what is the same thing, the purchasing power of the money of a country is determined exclusively by the scantiness of the supply of means of payment in that country in comparison with the volume of trade to be handled.

In any other country this money is valued proportionally to its buying capacity as against such commodities as can be exported from the first country. This valuation takes place in the money of the other country and must, therefore, be proportional to the general level of prices of that country. If trade between two countries, A and B, is free, the price of the money of A in the money of B stands consequently in direct proportion to the purchasing power of the A-money and in inverse proportion to the purchasing power of the B-money. The rate of exchange between the monetary standards is, therefore, determined, essentially, by the quotient of the purchasing power of these standards in their respective countries. This rate, which may be called *the purchasing power parity*, should always be regarded as the normal parity.

Change in Parities.—During the war the buying capacity of the different monetary standards has, owing to the overabundant supply of means of payment, been much reduced, though in

very different proportions. Consequently the purchasing power parities have undergone very important alterations and are now quite different from the parities which were in force before the war. These old parities have, therefore, now lost their old significance and can no longer in any respect be regarded as normal.

Rates of Exchange and Parities.—In the earlier part of the war, when a certain amount of freedom still was left for international trade, the actual rates of the exchanges used to coincide fairly well with the purchasing power parities. But later the sharp restrictions of the trade between nations have often distorted the exchanges. Thus if trade between two countries is more hampered in one direction than in the other, the value of the money of the country whose export is relatively more restricted will fall, in the other country, beneath the purchasing power parity. There are many instances of such abnormal deviations of the exchanges. Thus the inflation in the United States has without doubt been much smaller than in Sweden and the dollar has kept much more of its old purchasing power than the Swedish crown. The purchasing power parity must, therefore, have risen considerably above the old parity of Kronor 3:73 for the dollar. But the actual rate has fallen, under the time of the severest restrictions of American exports to Sweden, far beneath their old parity, the mean monthly rate for November, 1917, being as low as Kroner 2:55.

There are also other factors which may cause temporary deviations from the purchasing power parity, as distrust in the future of a monetary standard, outselling of the money of a country

at any price when foreign credits cannot be secured, export of money in order to evade exorbitant taxes at home, etc.

Variations in the purchasing power parity naturally have a disturbing influence on the trade between the countries. But as soon as this parity has been established at a certain level it is of no importance whether this level is high or low. Thus the export trade of a country is not hampered by low quotations of the foreign exchanges as long as these quotations correspond only to a high level of prices in foreign countries or a low level at home.

It is equally clear that every deviation of the actual rate of exchange from the purchasing power parity must be the cause of considerable difficulties for international trade. The export from A to B must be very much hampered if the money of B is quoted in A lower than would correspond to the general level of prices in B as compared with that in A. At the same time the import to A from B would get an artificial stimulus from such a quotation. Both these effects would tend to enhance the value of the B-money in A and bring it up again to its purchasing power parity, which is, therefore, the point of equilibrium for the exchanges. Of course, as long as payments can be made from A to B in gold this may cause in B a superabundant supply of money and, therefore, a rise in prices.

The present exchanges are determined, principally, by the purchasing power parity between the different monetary standards. But there are important deviations from these normal rates. These deviations will, however, mainly come to an end as soon as freedom is restored to international

trade and somewhat stable conditions have been established. The exchanges will then show only small variations about their purchasing power parities.

When the exchanges move against a country people generally explain it as a result of an adverse balance of trade. But this explanation is obviously quite inadequate if the deviation of the exchanges is considerable and has more than a temporary character. For if a country buys more from another than it sells to it the balance must be paid in some way, either by export of securities or by loans in the other country. Thus the balance of payments must, on the whole, equalize itself and there is no reason for an alteration in the rate of exchange. Should such an alteration occur it must be taken as a proof of an inflation which has brought down the internal value of the monetary unit of the country and raised its general level of prices. With an unaltered price-level and an adverse rate of exchange the country's export trade should get a strong stimulus which would tend to bring the exchange back to its normal rate. A temporary alteration in the rate of exchange could of course take place if the international trade were not free. A one-sided hampering of the export of the country would, as explained above, cause an undervaluation of its money abroad. But the explanation of the deviation of the rate of exchange from its purchasing power parity would then have to be sought in the one-sided hindrances against the trade between the countries.

It is often believed that a country which has seen the price of its money in foreign places sink very much below its pre-war parity will be able, after the

war, to restore the old exchanges only by increasing its exports. This will certainly be possible if the low quotations of the money of the country have been caused exclusively by one-sided hindrances against its exports. But if they are signs of a deteriorated internal value of the money no development of the exports of the country can better the exchanges. These will, in the future, be governed exclusively by the purchasing power parities and will, therefore, be improved only if the country succeeds in reducing its inflation thus giving its monetary unit a higher internal value.

In the popular explanations of the enhancement of prices a prominent place usually is given to the fact that prices have risen in other countries. We can now see that this explanation must be false. The exchanges adjust themselves to the general price level of each country. If then a general rise of prices has taken place in A, the value of the money of A in B will sink in the same proportion and with this new rate of exchange the higher price level in A cannot generally cause a higher price level in B. If the supply of means of payment in B is kept scanty enough the purchasing power of the B-money will be unaltered and quite independent of any inflation in A.

MEASURES FOR STABILIZATION OF MONETARY STANDARDS

The world is suffering, at present, most severely from the uncertainty of the internal value of money in the different countries and from the incessant fluctuations of the rates of exchange. Production which involves investment of capital becomes very hazardous when the future value of

money is quite uncertain. And the same holds true in regard to every international business transaction as long as nobody can tell, not even approximately, what the rate of exchanges will turn out when the transaction is completed. Under these circumstances the revival of productive activity and of international trade is very much hampered and delayed, to the greatest material detriment to the whole world and the most formidable danger for the preservation of civilized society.

Stabilize Money of the Separate Countries

Rates of Discount.—In meeting these difficulties our first aim should be to restore stability to the money of each separate country. This involves of course the cessation of all further inflation. The general means of keeping up a monetary standard is the sufficient limitation of the supply of means of payment in that standard. The regulator of this supply is the rate of discount. In the whole world the rates of discount have been too low during the war. The real scarcity of capital would have commanded a much higher interest than the 5 or 6 per cent which have generally prevailed but which have only been the result of a continual falsification of the money market. Even now, after the war, the world's need of capital is so great, in comparison with the scanty supply, that a real equilibrium can be attained only by aid of higher rates of interest than those generally prevailing.

Reduction of State Expenditures.—But even the most restrictive discount policy cannot set a limit to the inundation with money which still is going on. This steady inundation is mainly the

result of lavish expenditures of the governments, expenditures which go beyond the amount of actual savings which the state can dispose of either in taxes or in loans and which must, therefore, partly be paid for by creation of more money. Stability in the value of money can nowhere be attained unless state-expenditures are most severely cut down. With state expenditure reduced to a sound base a rational discount policy will always be able to prevent further inflation and keep up the buying capacity of the money at its present level. This stabilization of the monetary standard will, of course, be facilitated by a general return to more intense work and by the increased supply of goods which might be attained in this way. But these improvements, very desirable in themselves, will be of no help whatsoever as long as the supply of means of payment is not regulated with the decided aim of keeping the value of the unit of money unaltered.

✓ *Stabilize Value of the Unit of Money.*

—It is important to root out the popular fallacy that a general rise of prices can be prevented by legislation enacting maximum prices and inflicting punishments on speculators, while the government is incessantly flooding the country with fresh money and the bank-rate is kept too low.

Likewise the fallacy that it is possible to improve a monetary standard by heaping up masses of gold in the vaults of the central bank ought to be abandoned. The value of the money of any country is determined by the scantiness of the relative supply of means of payment in that money. As long as this supply is not reduced, no measures whatever can give the monetary unit a

higher value. If the money of the country is kept about par with gold by a sufficient limitation of the supply of means of payment, a gold reserve may prove useful for the actual carrying through of gold payments. But if this fundamental condition is not fulfilled the gold in the vaults is not much more than an empty show. The value of the money of a country is often confounded with the credit of that country. It is believed that a higher value can be restored to the monetary standard if only the government can re-establish its credit. According to what has been said here, this view must be false.

Restrictive Discount Policy

By aid of a very restrictive discount policy it would theoretically be possible to restore to any monetary standard its former value or a part of it. This would, however, involve an incessant lowering of prices during a long period, a proceeding which could not but have the most disturbing effect on all enterprise, hamper production and expose the country to serious depressions. Besides, every rise in the value of the monetary unit of a country means a corresponding increase in the real burden of the debt contracted in this money, an increase which most countries are not able to bear. Therefore, though small adjustments of a monetary standard may be desirable, every attempt at a restoration of the old value of money or the old level of prices should be given up where the monetary unit has lost, as in most cases it actually has, the greater part of its pre-war value as against commodities. The popular belief that prices by and by will come down to

their old level by themselves or at least without any definite measures of monetary policy seems to be quite groundless.

THE INTERNATIONAL MONETARY PROBLEM

The stabilization of the internal value of money, *i.e.*, of its buying capacity against commodities, is by far the most urgent object to be pursued by the monetary policy which we now have to enter upon. Between two nations which have attained this end a new normal rate of exchange will establish itself, this rate being determined by the quotient of the purchasing power of money in the respective countries. As freedom of trade and general confidence are gradually restored the actual rates will tend to coincide nearer and nearer with this normal rate.

The new normal rates of exchanges may be, and in some cases certainly will be, very different from the pre-war-parities. But this is a matter of secondary importance. The essential thing is that there should be *normal rates* and that these be kept as constant as possible. For this end no measure is needed other than the stabilization of the internal value of each monetary standard concerned.

It follows, however, that all countries are, in respect to the future of the international exchanges, dependent upon one another. It is, therefore, highly desirable that one country should take the lead, fixing the value of its money as against commodities and keeping it henceforth as constant as possible. The country from which this could first be expected is the United States. In their own national

interests, as well as in the interests of the world, they should give up every attempt at a reduction of their present level of prices, but on the other hand strongly resist the tendency to further inflation of the dollar which actually has shown itself in the last few months, in spite of the vain political campaign against the enhancement of prices.

With the dollar stabilized in the United States every other country could adjust the value of its money in a convenient proportion to the dollar and then, keeping its money in a constant internal value, attain a fixed rate of exchange with the United States as well as with every other country that followed the same line of endeavor.

THE GOLD QUESTION

There seems to be in all nations a desire to return to gold payments. The value of gold as against commodities having been reduced, during the war, to about the half of what it used to be before the war, the resumption of gold payments will be easy enough for those countries where the deterioration of the monetary standard has not gone much further. But a country with still more inflated money should give up every aim at a redemption of its notes in gold in conformity with the old standard. Such a country must first attain a certain stabilization of the internal value of its paper money. When this value is sufficiently fixed and foreign exchanges have settled themselves according to it, the country may take into consideration whether a new gold parity shall be given to its monetary unit.

The United States having already resumed gold payments, the dollar may be taken henceforth to represent

gold. When a country, as said above, establishes a fixed relation of its money to the dollar, it has then therewith also put its money in a fixed relation to gold and can, if it wishes, resume gold payments on this basis. If the relation lies in the neighborhood of the old parity, the country will probably try to adjust its monetary standard so as to correspond exactly to the old parity. This will be possible, *e.g.*, for England, but only at the price of the most energetic application of the above named measures for rising the value of a monetary standard: viz., a high rate of interest and a severe restriction of state expenditure. Other countries will find their standards far too much deteriorated to be brought up to the old parity with the dollar and will consequently choose a new convenient parity and concentrate all their energies upon keeping their money on that parity for the future.

In so far as resumption of gold payments are thought desirable it is essential that the value of gold as against commodities should henceforth be kept as constant as possible. This is a matter which will require the most careful attention. Gold, as is said above, now stands at about half its former value. The cause is that the demand for gold has diminished. The actual circulation of gold is very generally abandoned and the great central banks have reduced their claims on relative gold-coverings considerably. Should a return to pre-war conditions in this respect set in, the inevitable consequence would be an enhancement of the value of gold which would make resumption of gold-payments much more difficult than it otherwise ought to be and which would expose countries

with effective gold standards to a prolonged and probably most serious depression. It seems, therefore, to be a common interest for the whole world that such a rise of the value of gold should be avoided. Thus all countries should abstain from measures for reintroducing an actual gold circulation and the central banks should content themselves with their present standard of gold-covering. Countries which like the United States are in a position to draw gold to themselves from the rest of the world should abstain from doing so. The stabilization of the value of gold will clearly require, in the next years, a close coöperation of all countries.

We should on this subject constantly have in mind that the stability of the value of gold has very seriously suffered by the diminished demand for gold here referred to. Gold has never been a very stable standard of value; but it will henceforth, as far as can be judged, be a more inferior standard than it used to be. From this, friends of the gold standard may draw the conclusion that the old demand for gold should be restored, even at the cost of a new

price-revolution and a prolonged period of industrial depression.

Theoretically it may, on the other side, be argued that the present situation should be used to abolish gold altogether as a standard of value and go over to a more rational standard, based on index numbers. Every country is, of course, free to do that for itself, but it seems practically sure that the time for any sort of international agreement on a common standard of this nature is yet distant. Schemes for creating a new world money, which now and then are suggested in the papers, mostly involve the flooding of the world with additional paper money and, indeed, make themselves attractive to the general public only by measures which have ultimately this effect. That the way out of the present difficulties, however, cannot be sought in any such direction seems clear enough.

Which policy in regard to gold will in reality be preferred is very difficult to predict. But in any case it is of paramount interest that all countries should act in this delicate matter in concord with one another and in clear understanding of the whole bearing of the problem.

SOME OBSERVATIONS ON PROFESSOR CASSEL'S PAPER

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Anything from Professor Cassel's pen is sure to be interesting and important. The paper under discussion raises a great many important issues. I shall content myself with a series of comments upon certain aspects of it rather than try to give a systematic treatment to the subject of the paper as a whole.

The basis of Professor Cassel's doctrine is a very rigorous form of the quantity theory of money. For this theory the level of prices is a simple function of the number of exchanges on the one hand, and the quantity of circulating medium on the other, and it makes no difference whether the circulating medium is made of gold or of paper, or whether the paper is redeemable in gold or irredeemable. It is purely a question of the number of monetary counters. The number of exchanges, moreover, is commonly confused by quantity theorists (including Professor Cassel in the paper before us), with *the stock of commodities*, although in point of fact *the volume of exchange* is primarily a function of the amount of speculative turnover. For every bushel of wheat that came to the Chicago grain market in 1915 there were sixty-two bushels sold in futures alone, to say nothing of an enormous volume of spot transactions. Volume of exchanges may be very great or may be very small with a given stock of commodities. With a given stock of commodities it may vary radically in the same market from time to time,

and it may vary greatly as among different markets at the same time. A general discussion of the quantity theory is not called for in this connection and the writer contents himself with reference to his book, *The Value of Money*, in which he has sought to demonstrate the fallacy of that general type of reasoning. The interest here is in seeing certain consequences that flow from the quantity theory in connection with the problem of the international exchanges, and certain errors in Professor Cassel's conclusions which the employment of the quantity theory involves.

Professor Cassel's position appears to be that the international exchanges are primarily governed by what he calls the *purchasing power parity*, that is, by the relative levels of prices in two different countries, the price level in each of the two different countries being determined by the quantity of money and volume of trade in each country. Any deviation in the exchange rates from this purchasing power parity he regards as abnormal, temporary and unimportant. Thus, he says, "When the exchanges move against a country people generally explain it as a result of an adverse balance of trade, but this explanation is obviously quite inadequate if the deviation of the exchanges is considerable, and has more than a temporary character." Again, he refers to such factors as "distrust in the future of the monetary standard" as merely a

cause for temporary deviation from the exchange rates indicated by the purchasing power parity, and argues that, when deviation from the purchasing power parity occurs, influences are set in motion which would "tend to enhance the value of the B-money in A and bring it up again to its purchasing power parity, which is, therefore, the point of equilibrium for the exchanges."

The notion that exchange rates and gold movements between two countries, both of which are on the gold standard, are governed by their relative price levels, is a very indefinite and inaccurate notion. It is true that the prices of articles which enter into international trade have a great deal to do with international gold movements, and with the international exchange rates. If such prices are high in country A and low in country B, the tendency will be for goods to leave country B and for gold to come to country A, and for the exchange rates to be adverse to A and to be favorable to B. But articles of international commerce make up a relatively small part of the articles which must be considered in determining price levels. Many commodities are too bulky to move far. The whole body of wages and house rents, to say nothing of real estate prices and the prices of local securities, have remote and incidental control over the gold movements. Further, as is well known, discount rates, international banking transactions and the like, normally and regularly influence the gold movements and the exchange rates in a very powerful way. Further, a country in which the general level of prices is rising in a period of prosperity may

easily draw gold away from a country which is going through a period of depression, and in which prices are falling. Gold reserves may be piling up in the latter country and not needed for business expansion there, while gold is needed in the country with active business and rising prices, and higher discount rates may easily tempt it away from the country of falling prices.

Even though something be granted, however, to the validity of the notion that comparative price levels¹ affect gold movements and international exchange rates in a situation where two countries are both on the gold standard, and where the movement of gold is free, it by no means follows that this will hold true in the type of case which Professor Cassel is discussing, namely, exchanges among countries, all of which are on an *interconvertible* paper money basis. *Here there are simply no parities at all.* Here there is no possible basis for stability, except as one of the countries with a stronger position may "peg" the exchanges of the weaker country by giving it unlimited credit—and even this as a long run matter is exceedingly doubtful and difficult. The great fact which governs the value of irredeemable paper money is, not its quantity directly, but rather the prospect of its being redeemed in gold.² The quantity of paper outstanding will, of course, greatly affect this prospect, just as the volume of debt which an

¹ The writer ventures to refer to the chapter in his *Value of Money* on the "Quantity Theory and International Gold Movements," pages 315-320.

² That this is not the whole story is indicated in the writer's chapter on "Dodo Bones" in *The Value of Money*.

individual owes will affect the prospect of his being able to meet his debts and the standing of his credit in the markets. But a large volume of paper money issued by a strong government may easily have a higher value per unit than a smaller volume of paper issued by a weak government. Inconvertible paper money is at the mercy of every rumor affecting the credit of the governments. Political events, battles, policies in taxation, the success or failure of great funding loans, the volume of floating debt of the government apart from the circulating paper money, labor conditions, the export and import situation, the prevalence or absence of social unrest, the strength or weakness of political alliances, the volume of gold reserves, the vigor or timidity of the government's gold policy—all these things, changing day by day, govern the value of the paper money, govern its standing in the international exchange markets and influence powerfully the level of prices within the country. There are three great markets in which the value of such paper money may be measured. One is the foreign exchange markets; the second is the gold market, if active, open and free trading in gold is permitted; the third, the markets for commodities, securities, land and labor. The matter has been elaborately worked out for the period of the greenbacks in the United States from 1862 to 1879. I would refer here to Wesley C. Mitchell's well known studies, and particularly to his *History of the Greenbacks*. Variations in the value of the greenbacks were measured in all three of these ways in the United States during this period. The prices of gold in the free gold market in New

York and the price of sterling exchange moved very closely together. The prices of commodities in the United States moved more slowly. If, however, the curves for the standing of the greenbacks in those three great markets are plotted, the general parallelism among them is very striking. There was always, however, a substantial lag for the movements of commodity prices. Certainly, therefore, it could not be said that the course of commodity prices governed the exchanges. The more highly organized exchange market moved *first* and the less highly organized commodity markets responded less rapidly to changes in the value of the greenbacks, growing out of variations in the world's belief in their prospect of redemption.

In recent months the same thing has happened in Germany with mark exchange and commodity prices. When the exchange rate was four or five cents (American) to the mark, a distinguished European economist, reasoning on the same basis that Professor Cassel is now employing (namely that the purchasing power parities would govern the exchange rates), presented the fact that prices in Germany had not risen as fast as the mark had fallen in the international markets, and urged that consequently a rise in marks was to be expected. The prediction failed. Marks continued their downward course until they reached one cent per mark. Prices in Germany, though they have not risen as fast as the marks have fallen, continue to rise. The purchasing power parity did not govern the exchange rate, and does not govern it. Rather, both the internal purchasing power of the mark and its external standing are

governed by more fundamental forces, namely, the *value of the mark*, which primarily reflects the degree of expectation that it will some day be made good in gold. This expectation has steadily diminished as Germany's troubles and difficulties have become more apparent. The increased issue of marks, indicative of continued weakness on the part of the German Government and leading to an increase of the burden on the Reichsbank, has of course accelerated the process.

The heavy adverse balances of trade of virtually all the countries of Europe are factors of first magnitude in affecting their exchange rates. In part, for countries like Germany and some others, the great excess of imports is a reflection of the rapid fall in the *internal* value of the paper money. People in Germany do not check their foreign purchases as the exchange rates turn against them, because they expect the rates to be still more adverse in the future, and hasten to buy all they can before the bottom drops out entirely. They treat their money like overripe fruit, and get rid of it before it spoils on their hands. In part, however, even for the European countries whose currencies are soundest, there are heavily adverse exchange rates because of the sheer burden of the balance of quick liabilities to the United States and other non-European parts of the world, due to the one-sided flow of foreign trade. For Britain, *e.g.*, the exchanges are burdened not only by the internal depreciation of the paper pound, but also by the adverse trade balance, and, in addition, by Britain's efforts to give credit to the Continent, through buying Continental exchanges, and

through selling on long time to the Continent. External depreciation has probably gone further than internal depreciation for the pound sterling. For some other countries external depreciation has probably not yet measured adequately the internal depreciation.

Professor Cassel rejects as "a popular idea," the notion that a shortage in commodities would cause a rise in prices, which would necessitate the creation of more money, declaring it "an obvious fallacy." In general, he minimizes the extent to which shortages of goods have occurred during the war, suggesting the figure of 10 per cent at one place as indicating the shortages of commodities, and indicating a 20 or 30 per cent shortage as apparently an impossible outside limit. That rising prices can occasion and do occasion an increase in note issue under an elastic banking system, is, however, one of the commonplaces of banking theory. John Stuart Mill³ gives it his sanction, agreeing with the contention of Tooke that "in point of fact, in every signal instance of a rise or fall of prices, the rise or fall has preceded, and therefore could not be the effect of, an enlargement or contraction of the bank circulation." (This relates to the period covered by Tooke's *History of Prices*, down to 1832.)

In the writer's view, Professor Cassel minimizes to a degree that is almost grotesque the extent to which shortages of goods have been brought about by the tremendous wastes and demoralized production of the last five years. In ordinary times the

³ *Principles of Political Economy*, Book 3, Chapter 24, par. 1.

world lives from hand to mouth. The accumulated stocks of goods, available for consumption at any given moment, are normally small. It was estimated before the war that England usually had on hand about a six weeks' supply of food, and that a six weeks' interruption of her shipping would consequently bring England to the verge of starvation, since the bulk of her food comes in from abroad. The great bulk of the wealth of the United States consists of real estate, railways and their equipment, trolley lines, telegraph and telephone systems and the like—fixed capital and land rather than wealth available for immediate consumption. Comparing the income of the people of the United States with their supply of consumable goods on hand at any given time in the year 1912, the writer feels safe in estimating that a four months' supply of consumable goods would be the outside limit of our current stocks in that year, and that cessation of production for anything like four months would have brought us to utter destitution.

Such a decrease and disorganization of production, and such a wasteful consumption as the World War brought about, necessarily curtailed the world's stocks so greatly as to make a price revolution inevitable. The world cannot live upon its accumulated wealth. Land, bricks, mortar, rails and bridges, houses and factories cannot be used for food or clothing. Only the current product, which makes a very minor part of the total wealth of the world, is available for immediate consumption. In measuring the effects of the war's waste upon prices, then, we must institute comparison not between the waste of the war and

the total wealth of the world, but rather between the waste of consumable goods in the war and the current stocks of consumable goods in the world. It is absurd to deny that the war has created great scarcities. It is in these scarcities that we must find the major explanation of the changes in the *gold prices* of goods that have occurred during and since the war.

These considerations make it clear also that when production and consumption come back to something like normal relations, when exports and imports come back to normal equilibrium, when stocks of goods are replenished again, when labor is fully and efficiently utilized and wastes and extravagance reduced, relief from high prices in the United States will have been brought about.

The countries in which the gold standard has been abandoned have, of course, a more thorny path through which to go. For some of them, as Austria and Russia, the difficulties of restoring their currencies may be so great that we may well suppose them impossible. For others, like Great Britain, the restoration of the gold standard in a reasonable time may be confidently expected. The restoration of the gold standard, even in Austria and Russia, may be looked for by the same course that Mexico employed two or three years ago when she frankly repudiated her unmanageable mass of paper money and proclaimed a new gold standard, making only hard money legal tender. It may indeed happen that the countries where monetary chaos has gone farthest will be the very first to come back on a hard money basis, through the complete unwillingness of their

people to accept any other kind of money. For other countries there may be a prolonged period during which a struggle will be made to restore equilibrium between taxes and outgo in the public budgets, and to fund the public floating debts, including the debts of the states to the banks of issue, with a consequent reduction in the volume of bank notes outstanding, and with the ultimate resumption of specie payments held in view.

One must protest, however, against Professor Cassel's statement that "the restoration of the old gold parities is, as everybody knows, quite out of the question." Some countries may be unable to reëstablish their old gold standards, but many of the countries of Europe will be able to do so, and most will at least be justified in making the attempt to do so. In any case it can be confidently asserted that no stability in international exchange rates will be possible until the currencies of the world are again at a fixed ratio with gold, and that the only way in which a currency can be kept at a fixed ratio with gold is to redeem it directly or indirectly in gold on demand. I say "directly or indirectly" wishing to allow room in the generalization for such cases as "gold exchange standard," under which the gold reserve is held in a foreign

country, and under which the currency of a country is redeemed in gold bills drawn on that foreign country, rather than in actual coin. This constitutes, however, merely a modification of the gold standard proper, and can work effectively only if actual gold can be secured at the end of the process. We must especially guard ourselves against the notion that any scheme for the *regulation* of the *quantity* of an *irredeemable* paper money can lead to stability, either in the internal or in the external value of that paper.

In summary: finding much that is interesting and important in Professor Cassel's paper, I limit my discussion to the points of dissent. I think that he minimizes the really important factors affecting the exchange rates, such as the trade balances, the growing distrust of irredeemable paper money, and the like, and that he is dealing with a myth when he speaks of "purchasing power parities" as governing exchange rates between countries, both of which have inconvertible paper money. The only parity that can have any meaning in international exchange rates is a gold (or silver) parity, and when gold is abandoned, "parity" ceases to mean anything. Stability in international exchange rates depends on the restoration of the gold standard.

DISCUSSION OF PROFESSOR CASSEL'S ARTICLE

By LORD D'ABERNON

Surrey, England

It is a keen intellectual pleasure to read Professor Cassel's brilliant statement on "The World's Monetary Problem" and to contrast it with the puerile inanities which form the basis of most

that is written and spoken on the subject.

To show how widely Professor Cassel's views differ from those generally held, it may be well to place in close

juxtaposition and in clear relief the popular view and those set forth in the article under review.

The popular view is that the exchanges will right themselves when trade resumes its normal course.

Professor Cassel holds that this return to the old basis is quite out of the question.

The rise of prices is popularly attributed to high cost of transport, to diminished output of labor, etc.

Professor Cassel holds that there can be no independent cause of a rise in the upward movement of prices other than a decrease in the total mass of commodities and an increased supply of money—the latter cause being in the present case incomparably the most important.

It is generally thought that an unfavorable exchange favors the export trade of a given country and impedes the import trade.

Professor Cassel holds that once exchange is stabilized, it is of no importance whether the level is high or low.

People generally explain a low exchange as the result of an adverse balance of trade.

Professor Cassel points out that this explanation is quite inadequate to explain considerable and non-temporary fluctuations. These can be explained only by inflation which has brought down the internal value of the monetary unit of the country.

The popular expectation is that the old exchange level can be restored by increased exports.

Professor Cassel holds that this is only possible where the low exchange has been caused exclusively by war-time prohibitions of export. Where

the cause is an internal depreciation of the monetary unit through an excessive supply of currency, a reduction of inflation is the only remedy.

The popular view is that a general rise of prices can be prevented by legislation against profiteering and the enactment of maximum prices.

Professor Cassel says that result is unattainable so long as the government is incessantly flooding the country with fresh money, and the bank rate is kept too low.

The popular view is that heaping up masses of gold in a central bank will improve the monetary standard.

This the Professor regards as an illusion, the value of the money of any country being solely determined by the scantiness of the supply of means of payment relative to the demand for means of payment. Unless the national currency is on a par with gold, gold in the vaults is not much more than an empty show.

It is generally believed that a higher value would be attained by the national currency (leading to improved exchanges and a reduced cost of living) if the government of the country can reestablish its credit.

This view the Professor holds to be false, the sole reason of the depreciated currency being superabundance.

The general view is that prices will by and by come down to their old level by themselves. This view is held by the Professor to be quite groundless in the absence of definite measures of monetary policy.

The above enumeration by no means exhausts the list of articles of popular currency belief which Professor Cassel holds to be totally erroneous and misleading.

The question is, are these statements merely scintillations of academic paradox written as intellectual amusement, or are they the expression of a complete theory of currency and prices, fundamentally different from the vague beliefs on which the slipshod monetary policy of nearly all the governments of the world is based? The two conceptions of the problem are so divergent that no compromise or half-way house is possible between them.

If the Professor is right, the monetary policy which is now being followed in most countries in the world is radically wrong, and will lead, unless modified, to an aggravation of the discontent, unrest and financial disturbance which now prevail.

If the Professor is wrong, it must be shown where the fallacy lies, and recorded facts must be explained and reconciled on some other general hypothesis.

Personally, I agree with Professor Cassel in nearly all his main conclusions, and I regard his paper as at once the boldest and the most clear-cut statement which has yet been made on the problem.

This is not the moment to discuss some minor differences, when general identity of view is proclaimed.

The facts recorded in the *Monthly Bulletin of the Supreme Economic Council*, and those presented still more strikingly in the *White Paper* (Command Paper 434) are not explainable on any other hypothesis.

Unless a general theory similar to that stated in the present paper is adopted, what explanation is there of the admitted fact that prices in each country have risen in direct proportion to the over-supply of currency, and that foreign exchange in each country has fallen in nearly similar proportion? Is any such result conceivable if superabundance of currency was either a non-existent cause or a minor cause? Do not the facts and figures point directly to the conclusion that currency is the dominant factor?

Great importance is attached in some quarters to the influence of excessive imports and inadequate exports, but in Russia where the disturbances caused by inflation are seen in their most extreme form, and where prices are higher and exchange is lower than anywhere else, there has certainly been no excessive importation of foreign goods; similarly with Germany and Austria. Does anyone contend that the fall of the mark to one-tenth its par value or lower has been caused by an excess of importation from abroad?

The conclusion of the whole matter is that a faulty currency policy during the war and still more since the war has been the main cause of high prices and low exchange, and of all the resulting unrest and disturbance. Until a wiser currency policy is adopted by the great nations of the world, there is no chance of permanent improvement.

A DISCUSSION OF PROFESSOR CASSEL'S ARTICLE

By IRVING FISHER

Yale University

There is nothing, I think, in Professor Cassel's able paper to which I cannot give a very hearty assent. Under these circumstances there seems to be no need for me to attempt any lengthy comment. I shall, therefore, merely restate, briefly, what seem to me the salient truths brought out by Professor Cassel and add a little emphasis to the remedies available.

While, theoretically, there are many possible causes for changes in the price level, the master key is always, or almost always, monetary. Even during the great war, when some countries' scarcity of goods played a big part, inflation played a still bigger part. This inflation has, incidentally, cut the purchasing power of gold in two, primarily through the displacement of gold by paper.

Changes and uncertainty in the purchasing power of the dollar and other monetary units escape notice as such, yet they are, in actual fact, far more serious than changes in the foreign exchanges. Furthermore, the change in the rate of exchange is, for the most part, a reflection of changes in relative purchasing power. The franc is worth so little today in America because it will buy so little in France. The true remedy, therefore, is to stabilize the purchasing power of monetary units in each separate country, (1) by stopping inflation, which implies stopping excessive governmental expenditures; (2) by a proper control of banking, especially as to the rate of discount, and (3) if we wish a complete solution, by varying the weight of the dollar.

If the United States will set the example other countries will follow. The great practical question is to select the price level for each country which we wish to maintain.

Undoubtedly, we shall soon see arrayed against each other the forces favoring inflation and those favoring deflation. There ought to be in each country, I believe, a judicial commission to determine what real justice demands. Merely to resume specie payment is not necessarily to render contractual justice, if the specie in which the resumption is to take place continues to have only half the value it had before the war. On the other hand, we would be too drastic if we attempted to go back to pre-war price levels. There has been a veritable "price revolution." The present high altitudes are not much above the levels of two or three years ago. Meanwhile, a great mass of contracts have come into existence, including government bonds. If all countries should deflate to restore the pre-war price level the French war debt, under which France is already staggering, would virtually be multiplied by three, for her present inflated price level represents a three-fold depreciation of the franc.

I imagine that a judicial commission, taking testimony as to contracts now outstanding and the price levels at which they were started would conclude that, while the immense amount of injustice created by the price upheaval of the war cannot be undone, the amount of injustice will be less if a

price level is chosen for the future, only slightly below the present price level, say 5, 10, or 15 per cent, varying in different countries.

Why should we not thus judicially and deliberately choose new price levels for our new world? In other words, why not choose anew our sovereign, franc, mark and dollar?

What the coins representing these monetary units *weigh* is of no consequence compared with what they *buy* and if we once decide on what they ought to buy, that is, what the general level of prices ought to be, it is easy to decide what the weight of the respective monetary units shall be to start with.

I do not mean that we should immediately drop down 5, 10, or 15 per

cent. There should be a gradual approach, an inclined plane or gang-plank, from existing price levels to the permanent price level decided upon, descending perhaps one-half of one per cent per month, or whatever other rate is, after careful consideration, found to be best.

I shall not attempt here to restate the plan, which I have so often advocated, of stabilizing the dollar, but take the liberty of referring the reader to my book by that title, now out, which attempts to give the full argument for stabilization for which, in some form, the needs of the times cry aloud.

If we once stabilize each individual monetary unit, we shall thereby also stabilize international exchanges between them.

DISCUSSION OF PROFESSOR GUSTAV CASSEL'S "PRICES AND THE MONETARY PROBLEM"

By WILLIAM A. SCOTT

University of Wisconsin

Professor Cassel's diagnosis of the monetary and price problem which now confronts the world is, in my judgment, confused and my own confidence in the value of the remedies he suggests is weakened by his loose use of the term inflation and his exclusive reliance upon the quantity theory of prices.

His test of the presence or absence of inflation appears to be prices. If their level has risen, he concludes that inflation is present, whether the immediate cause of the rise be the cheapening of gold or the depreciation in the incontrovertible currencies of Europe. There would be no harm in such a use of the term if he did not rely chiefly upon inflation for his explanation of

the change in the price level. To conclude that there is inflation whenever there is a rise in the level of prices and then to explain the rise by inflation is to reason in a vicious circle and to lead nowhere.

The quantity theory of prices is equally confusing and valueless in the present discussion. To refer to that old formula, in a discussion of the ultimate causes of price changes, is to misconceive the problem and to follow a false scent which will lead back to the point from which the start was made and throw no ray of light upon the dark places.

As I see the situation, there are three fundamental problems now awaiting

solution which, in importance, have precedence over all others. They are the increase in the production of staple commodities; the resumption of specie payments in Europe; and such a revision of the budgets of the governments of the countries which were engaged in the World War as will enable them, out of current revenues, to pay current expenses, the interest on their public debts and an annual sum sufficient for the accumulation of a sinking fund, adequate to the payment of the principal of their debts in a reasonable period of time. Of course, these problems are not entirely independent of each other, either in origin or in solution. The solution of one will help in the solution of the others and no complete and final solution of one is possible without the solution of the others, but they are sufficiently independent to warrant their being attacked separately.

For the solution of the production problem we need, primarily, peace, including a league of nations or some other settlement of our post-war international political problems, the removal of embargoes on commerce and the restoration of practicable working relations between laborers and their employers.

The problem of the resumption of specie payments can be solved only by the retirement of the inconvertible notes, which the governments of Europe issued during the war, for the purpose of forcing a loan from the people, and the reduction of the issues of European banks to such a volume as will restore their convertibility into gold on demand. Any attempt to compromise on this matter in the manner suggested by Professor Cassel, or

in any other way, in my judgment, will only prolong the agony. This is not an insoluble problem and its solution within the next five years will be easier and attended with less disturbance than at any subsequent period. The solution will be found, however, only if economists and statesmen resolutely face the problem. If they entertain the feeling that the situation is hopeless and that past experience can no longer serve as a guide, and toy with such nebulous ideas as are involved in Professor Cassel's "purchasing power parity," we may wallow in the present "slough of despond" for an indefinite period.

The difficulties of the budgetary problems of the governments of Europe can hardly be exaggerated, but they cannot be lessened or removed by beclouding the question at issue. The debts incurred during the war, including those in the form of notes now circulating as money, must either be paid or repudiated, and the financial consequences of these two methods of procedure will not be so different as at first glance they appear to be. The debts in question are mostly domestic, and, if they are paid, taxes sufficient to meet the annual interest charge and to build up an adequate sinking fund must be levied on and collected from all the persons subject to taxation, and turned over to the holders of bonds and other public securities. If they are repudiated, a tax likewise will be levied but exclusively on security holders. Assuming that all security holders are taxpayers, and all taxpayers security holders, an assumption not very remote from the facts, the resulting financial position of each citizen will depend upon whether he loses more as

taxpayer than he gains as a public security holder or vice versa. The balance of gains and losses will, of course, vary with different persons and will not be the same in perhaps any case under the debt-payment and debt-repudiation plans, but in many cases the difference will not be great, and in every case there will be gains and losses to be balanced under either plan.

Of course, a combination of the two plans is possible, amounting in substance to partial repudiation or a scaling of the debts. It is this which Professor Cassel suggests when he recommends that "every attempt at the restoration of the old value of money" should be abandoned. The old value of money and the old price level are not identical, though his method of reasoning forces him to maintain that they are. The old value of money in the gold-standard countries is the value of the amount of gold constituting the unit of the value, whatever that may be, and, if that value is less now than it was formerly, as it doubtless is, the restoration of the value of money would not restore the old level of prices, but it would restore the convertibility into gold of all forms of the currency of each country.

The solution of the above mentioned problems will restore the exchanges to their pre-war state and will relieve the banks of the world of the greater part of the strain under which they are at present operating. The chief cause of their present overexpanded condition is the support they have been obliged to give their respective governments in the financing of the war. As soon as the finances of these governments have been placed upon a sound basis, the banks will be relieved of that obligation. Another cause of expansion is speculation which is everywhere rampant at the present time, especially in this country. For the support of this the banks are themselves responsible and the remedy for whatever amount of over-expansion is due to this cause they have in their hands, and they should apply it vigorously and without further delay in the form of increased discount rates and greater discrimination in the granting of credits. To expect the banks to accomplish more than this amount of deflation, to use a widely current term, is to expect the impossible, and to rely upon bank deflation as the chief element in the solution of present price and monetary problems is, in my judgment, to court disappointment and to delay a real solution.

OBSERVATIONS ON ARTICLE OF PROFESSOR GUSTAV CASSEL

By WALTER LICHTENSTEIN

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In general, I find myself in complete agreement with Professor Cassel, and it is interesting to note that he emphasizes certain aspects of the question of high prices with which the public is

altogether too unfamiliar. The statement that "it is important to root out the popular fallacy that a general rise of prices can be prevented by legislation enacting maximum prices and

inflicting punishments on speculators, while the government is incessantly flooding the country with fresh money and the bank rate is kept too low," cannot be repeated too often. The popular fallacy, to which Professor Cassel refers in the paragraph quoted, is leading to agitation in this country, which, if sufficiently long continued, will have disastrous effects upon business enterprises. If our large employers of labor are to be compelled to pay high wages, and at the same time are afraid to charge sufficiently for their products for fear that they may go to jail if they do so, it is obvious that we shall soon face a complete stagnation in business. As stated in several recent papers, it is not at all desirable for this country that there should be a very sharp reduction in the present price levels, and it would be well if we all realized that any reduction in price levels ought to be rather gradual. To be sure, Professor Cassel is probably not correct in believing that the present price levels should be maintained for all time. As Professor Wesley C. Mitchell of New York showed at a recent meeting of the American Economic Association, the experience of the past teaches us to believe that in course of time the level of prices will become again more nearly what we regarded as normal before the war.

Professor Cassel's explanation of ratios of exchange between various countries is interesting and illuminating. He makes it perfectly clear that the panacea put forth recently by various gentlemen for doing away with present exchange difficulties by creating a kind of international currency, would not solve our difficulties at all,

since, according to his view, the exchange ratios do not depend by any means entirely upon the question of the relation of monetary units to gold, but to a large extent upon the purchasing power of the currency of any country within that country itself. It is therefore evident that if every country had the same currency it would not mean that this currency would necessarily be of identical value in every country, and international bills of exchange would not by any means be payable at par the world over.

In his discussion at the meeting of the American Economic Association, Mr. James B. Forgan agreed with, and in a sense anticipated the remarks of Professor Cassel regarding the desirability of raising discount rates. Professor Cassel is entirely correct in stating that this was too long delayed from a theoretical point of view, but, on the other hand, there were many practical considerations why the governments did not dare to do what undoubtedly their financial advisors thought desirable.

Professor Cassel has not touched upon one remedy which might aid the situation very much, and which has been discussed at considerable length in the book of Mr. J. M. Keynes, *The Economic Consequences of the Peace*, recently published. According to Mr. Keynes, and he undertakes to prove his points by means of a wealth of statistical material, the trouble with the whole world at present is that it is laboring under a mass of governmental debts which can never be paid, but which will be a source of continuous irritation and uncertainty. Probably the whole world, including the United States, would be better off if some

international conference would be called, consisting of leading financiers and economists to consider carefully the question of the situation in each and every country, and on this basis readjust the financial obligations of the various countries, one to another. This would bring about a sanitation of economic relationships which would lift a burden from the shoulders of everyone engaged in productive activity. The world at present is much like a bankrupt concern which, nevertheless, is continuing to stagger on without trying to reach some adjustment with its creditors. In addition to an international economic conference, the question might well be raised in many of the countries whether it would not be better for everyone concerned if the internal debt were

cancelled. If we take a country like Germany, for example, its internal debt and its international obligations are such that in one form or another everyone having means at all will face what amounts to a recurrent confiscation of property. Would it not be better if the state were to frankly repudiate all its internal debts and permit everyone start afresh? After all, such a repudiation would strike those very same people who will suffer from a system of taxation which is to be regarded as being equivalent to gradual confiscation. An old proverb says, "An end with frightfulness is to be preferred to frightfulness without end." It seems to me that this proverb might readily be applied to the present financial state of the world.

A DISCUSSION OF PROFESSOR CASSEL'S ARTICLE

By A. BARTON HEPBURN

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I have read Professor Gustav Cassel's paper with very great interest and general approval. I take exception to some things, however. *What has Happened to the World's Monetary Standards* is well stated.

Like all devotees of the quantity theory of money, however, Professor Cassel gets the cart before the horse. Under the heading "Popular Ideas," in arguing that the quantity of money fixes the price level and in combating popular ideas which are erroneous in his opinion, he says, "This is the case, e.g., when people speak of high wages, high cost of raw material, etc., as the causes of the general increase in prices." The cost and hence the

prices of finished goods are represented mainly by the cost of labor and the cost of raw material. When the cost of these items is increased, the cost of the finished product is necessarily increased, and high or higher prices inevitably result. This is so manifestly true that it seems strange that anyone can argue that the quantity of money is alone responsible for increased prices. People do not actually borrow money in advance with which to go shopping, even when they arrange credit in advance. The issue of the credit instrument in payment invariably follows the transactions. People buy products and then they seek some sort of credit

with which to pay for the same. This may result in increased bank credit; it may result, in certain instances, in increased bank circulating notes, but the increase of the credit instrument, whatever form it may take, follows the business transaction, and is the result and not the cause. When at the beginning of the European war, because of the limited supply of commodities, different nations began bidding against each other in order to supply their needs, that bidding necessarily increased the price. Then these respective bidders sought credit as a means of payment. It was the competitive bidding that advanced the prices, not the creation of credit instruments with which to pay for commodities.

The fact that Europe, in the first two years of the war, sent us a billion dollars in gold in payment for their purchases was not what advanced prices, nor would the cause have been money, had they made loans in this country instead, to pay the debts incurred. It was their necessitous and insistent demand for the product and their bidding against each other that advanced prices, and not the quantity of money or credit instruments. Credit instruments, whether currency or otherwise, are not created in advance of business transactions, but are created to enable the party purchasing to consummate the transaction by means of payment. Payment is a subsequent event.

I agree with Professor Cassel that the world is suffering at present most severely from the uncertainty of the internal value of money in the different countries. Many years ago my bank correspondent in Amsterdam gave me

a luncheon which was attended generally by the bankers of Amsterdam. I recall one of the bankers telling me that during our Civil War he purchased a large volume of United States bonds, paying for the same in European exchange, which of course was the equivalent of gold at that time, at 43 cents on the dollar. He held these bonds until after the resumption of specie payment in 1879 and later sold them at 118. Gold went to a premium in the United States in 1862 and remained at a premium until the resumption of specie payment, January 1, 1879. During this interval we had the "greenback" craze and the doubt as to whether the United States would redeem its obligations in gold according to their tenure had the effect of greatly depreciating our currency. Our legal tender note was worth at one time only 40 cents on the dollar. From the close of the Civil War till January 1, 1879, there was a continuous trade balance in favor of the United States. The balance of trade is only one factor in determining exchange; the doubt as to the real value of a country's currency is another, and very important element to be considered.

Professor Cassel says also, "In the whole world the rates of discount have been too low during the war." That is manifestly true. If our government had offered its bonds at the current rate of interest instead of appealing to the patriotism of the people and resorting to a propaganda in order to place the issue, the bonds would have stayed at par or above and the public would have continued to own them instead of selling them, forcing them into money centers, and very largely into the banks. The apparent saving

in the low rate of interest cost people many times that rate of interest in the depreciation of their securities and the inflation of prices generally.

Prices generally depend upon the law of supply and demand. Money is no exception. High prices lessen the demand and tend to bring about a stable equilibrium. It is always in the interests of commercial communities to charge fair rates for money as it is to charge fair rates for any other article or service. Had our government paid fair rates they would have kept their securities at or about par, kept them in the hands of the public and made it much easier to overcome high prices which are the result of inflation.

Our government spent over a billion dollars purchasing its own securities in the market, under the mistaken idea that they were sustaining the prices of the same. The prices, nevertheless, continued to recede. Had they not adopted this policy, the interest being certificates in the banks would be lessened by that amount, and our commercial and financial interests would be in that much better position.

We can have no deflation until this floating debt of the government carried by the banks in the form of interest-bearing certificates, which now exceeds three billions of dollars, is retired. The banks will then have sufficient funds to supply the commercial demands of the business community, and prices will go down from their present dizzy height to a more normal level.

I cordially endorse what Professor Cassel says about the reduction of state expenditures. Until the incomes of the governments recently at war equal their expenditures; in other words, so long as they go on increasing their debt, deflation is impossible and the uncertainty of the value of their currency is intensified.

This is a question which must be settled by each country itself. England's trade balance, according to Lloyd George, is now favorable and her income will, for the present fiscal year, equal her expenditures. England is in a position to "come back" and resume her position as one of the leading commercial nations of the world. The continental countries are by no means in as favorable a condition.

COMMENTS ON PROFESSOR CASSEL'S ARTICLE

By EDWIN CANNAN, M.A., LL.D.,

Dean, Faculty of Economics, University of London

I AM entirely in agreement with Professor Cassel's explanation of the general rise of prices and of what is called the "dislocation of the exchanges." I applaud his exposure of the folly of supposing that a hoard of gold which no one may draw upon is of some immediate use in supporting the value of a paper currency, and I

welcome his support for the doctrine which I have (without much success) been trying to teach the public, that the high profits, supposed to be due to some witchcraft called "profiteering," are simply the result of a depreciating currency which means a rise of prices between the time of buying and the time of selling. As to reme-

dies also I am in agreement with him. I am only inclined to add a little without taking away anything.

First, I think it should be clearly understood that a "discount policy" is not likely to work, unless those who have to put it in force recognize that the purpose of it is to reduce the currency, and are themselves in sympathy with this purpose. I do not believe, for example, that the Bank of England could bring the pound up to its proper value of 113 grains of fine gold or \$4.86 by putting the bank rate up, unless the other banks and the government saw that what was wanted was to reduce the outstanding amount of bank notes and currency (usually called "treasury") notes, and were really desirous that the reduction should take place. Consequently, I put more faith in direct action for reducing currency. In England, at any rate, it is perfectly easy for the government to reduce the bank-note currency by a very large amount in a very short time and without any expense, but with considerable profit. Gold equal to a hundred and thirteen million sovereigns is held by the Bank of England against its notes. The notes are convertible, but if a private person presumes to convert them and then to export or melt the gold, the government can and does prosecute him; no one, however, can prosecute the government itself for drawing out and exporting as much gold as it can present notes for. The British Government, therefore, unlike all other institutions and persons, is able to procure with £1 what will pay a debt of nearly \$4.86 in America, since it alone is able not only to get five sovereigns with a £5 Bank of England note but

also to send the sovereigns abroad to be sold for what they will fetch. If, as is probable, it shrinks from thus affronting the worshippers of "gold backing," it can still reduce the currency notes by the simple process of getting some of them in by taxes, or by borrowing at interest, and cancelling them. Of course, any of these methods will tend to cause an immediate rise in the money market rate of interest, but I do not think a rise so caused would excite nearly so much opposition as what would be called an "artificial" rise brought about for the purpose of reducing the currency.

Secondly, I think it is necessary to insist strongly on the fact that each country acting alone, however indebted and poverty stricken it may be, has the power of bringing its money—its unit of account—into some fixed relation with gold and keeping it there. It may be impossible, or if not impossible very undesirable, for Germany to bring the mark up to the value of 24 cents, but it is quite possible for Germany alone to fix the mark at 1 cent or some rather higher figure, and very desirable that it should do so. To cure the violent variations in exchange which are the real evil of the "dislocation," what is required is for each of the countries not at present on a gold standard to come back to that standard, no matter, so far as civilization in general is concerned, what particular rate each of them may, having regard to its own circumstances, find convenient. This is not a matter for international action, and nothing but harm is done by the perpetual suggestion that the United States or all the countries with the least depreciated currencies are to take steps to reha-

bilitate the more depreciated currencies of other countries.

It is only after civilization has been restored by the reestablishment of the common monetary unit, *i.e.*, an ounce of pure gold, which prevailed before the war throughout all the world except a portion of the east where silver was the unit and a few disordered localities in the west, that international action is admissible.

There is no need for the restoration of gold as a standard to cause a great additional demand for it. There is no reason for giving up the circulation of paper and taking again to pockets and tills full of heavy metal. We, in England, do not want sovereigns and half sovereigns again; we should have discarded them long ago, like the Scotch and Irish and the inhabitants of most of the white colonies, if our banks' convenience had not caused our legislature to persist in the prohibition of notes under £5. The stocks of gold in the banks and these hoarded away for the present by individuals are together quite sufficient to provide the reserves necessary for keeping the different paper currencies in their proper relation to each other and to gold. But the infirmities of reasoning power in the human race and the backward state of elementary instruction in economics are such that it is possible, as Professor Cassel fears, that the restoration of the gold standard may be accompanied by a large demand for gold for currencies and reserves, even if it takes place as the considered policy of governments. There is another possibility—that gold may be

restored as a standard by the people, independently of their governments. Tired of the perpetual depreciation of paper money, people have often refused to deal in it any more, and have taken, in spite of their government, to buying and selling in metal instead of notes; if this should happen, as we are told it has already happened in Mexico, there would necessarily be a large demand for gold for currency.

It may be, therefore, that the restoration of the gold standard, in the absence of corrective measures, may involve a great and inconvenient drop in prices when reckoned in that standard.

On the other hand, nothing of this kind may occur. Professor Fisher may be right in believing that the demand for and the supply of gold will be in such relation that prices in gold will not fall, but will go on rising as they went on rising before the war, and that to an inconvenient extent.

If pressed for a guess, I should be inclined to hazard that the immediate result of the restoration will be a fall of prices, but that the old rise would soon be resumed. The thing that is most unlikely is that gold would be very stable. When my grandmother was told by one of her sons that he intended to "trust in Providence," she retorted, "I never saw any good come of that!" If mankind wants a stable standard, they must bestir themselves to make one, and not trust that Providence will arrange that gold or any other particular metal shall always buy the same quantity of goods in general.

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